



# **CABLE CARRIERS**

for □-Track



## Contents

|                                                                                      |  |         |
|--------------------------------------------------------------------------------------|--|---------|
| General Information                                                                  |  | 3       |
| Questionnaire                                                                        |  | 4       |
| S 1 Track & Accessories                                                              |  | 5 – 9   |
| LS 1 Cable carriers & Accessories                                                    |  |         |
| – Polyamid type –                                                                    |  | 10      |
| S 1 Cable carriers & Accessories                                                     |  |         |
| – Polyamid swivel type –                                                             |  | 11      |
| S 1 Cable carriers & Accessories                                                     |  |         |
| – Steel type –                                                                       |  | 12 – 14 |
| S 1 Cable carriers & Accessories                                                     |  |         |
| – Steel type –                                                                       |  | 15, 16  |
| S 1 Cable carriers & Accessories                                                     |  |         |
| – Steel type for hoses                                                               |  | 17      |
| S 1 Control carriers & Accessories                                                   |  | 18, 19  |
| S 2 Track & Accessories                                                              |  | 20 – 23 |
| S 2 Cable carriers & Accessories                                                     |  |         |
| – Steel type –                                                                       |  | 24      |
| S 2 Cable carriers & Accessories                                                     |  |         |
| – Steel type –                                                                       |  | 25      |
| S 2 Cable carriers & Accessories                                                     |  |         |
| – Steel type –                                                                       |  | 26 - 29 |
| S 2 Cable carriers & Accessories                                                     |  |         |
| – Stainless Steel type –                                                             |  | 30      |
| S 2 Cable carriers & Accessories                                                     |  |         |
| – Steel type for hoses                                                               |  | 31      |
| S 2 Control carriers & Accessories                                                   |  |         |
| - Steel type for round & flat cables                                                 |  | 32, 33  |
| S 2 Control carriers                                                                 |  | 34      |
| S 2 Control carriers installation information                                        |  | 35      |
| S 3 Track & Accessories                                                              |  | 36      |
| S 3 Cable carriers & Accessories                                                     |  |         |
| – Steel type –                                                                       |  | 37      |
| K 1 Track & Accessories                                                              |  | 38, 39  |
| K 1 Cable carriers & Accessories                                                     |  | 40      |
| K 1 Accessories & Control carriers                                                   |  | 41      |
| K 1 Cable carriers & Accessories                                                     |  | 42      |
| Chains and ropes for cable tension relief                                            |  | 43      |
| Typical Applications and How to Order                                                |  | 44 – 46 |
| System Layout                                                                        |  | 47      |
| Support Spacing for Box Tracks                                                       |  | 48      |
| How to determine                                                                     |  | 49      |
| Graphs to find Number of Cable Loops considering 10, 15 and 20 % cable safety length |  | 50 – 52 |
| System pictures                                                                      |  | 53      |

**Catalog No. 8a: Cable Carriers on □ -Tracks**

**Catalog No. 8b: Cable Carriers for flatform cable on I -Beams**

**Catalog No. 8c: Cable Carriers for round cable on I -Beams**

**Catalog No. 8d: Cable Carriers on ◇ -Tracks**

**Catalog No. 8e: Conductor cables & Fittings**



## General

VAHLE Festoon Systems support conductor cables (flat or round) and hoses (hydraulic and pneumatic applications) for delivering power and control to mobile equipment in a safe, efficient and maintenance free method.

The cable carriers are well guided inside their □-tracks and protected against humidity, dust and icing.

All box-tracks can be bent in accordance to the system layout, considering the minimum bending radii and the permissible cable loops.

VAHLE cable carriers contained in this catalog comply with the VDE and most international regulations.

The use of flatform cable is highly recommended due to better bending properties compared to round cable. The minimum bending radius permissible for round cable is 5 times the cable diameter – for flat cable it is 5 times the thickness of the cable. This formula allows considerably smaller bend radii for flat cable, minimizing the required Festoon System storage distance which is normally within the length of equipment (e. g. hoist trolley – see page 4).

VAHLE cable carriers not only deliver power and control to mobile equipment which has reciprocal motion but also support large quantities of data cables including optic fibres travelling independently from the mobile machinery. The relevant control carriers with and without push button lifting are also shown in this catalog.

The cable carrier programs S1 / S2 are aswell suitable for ex-proof areas. Please send your enquiry.

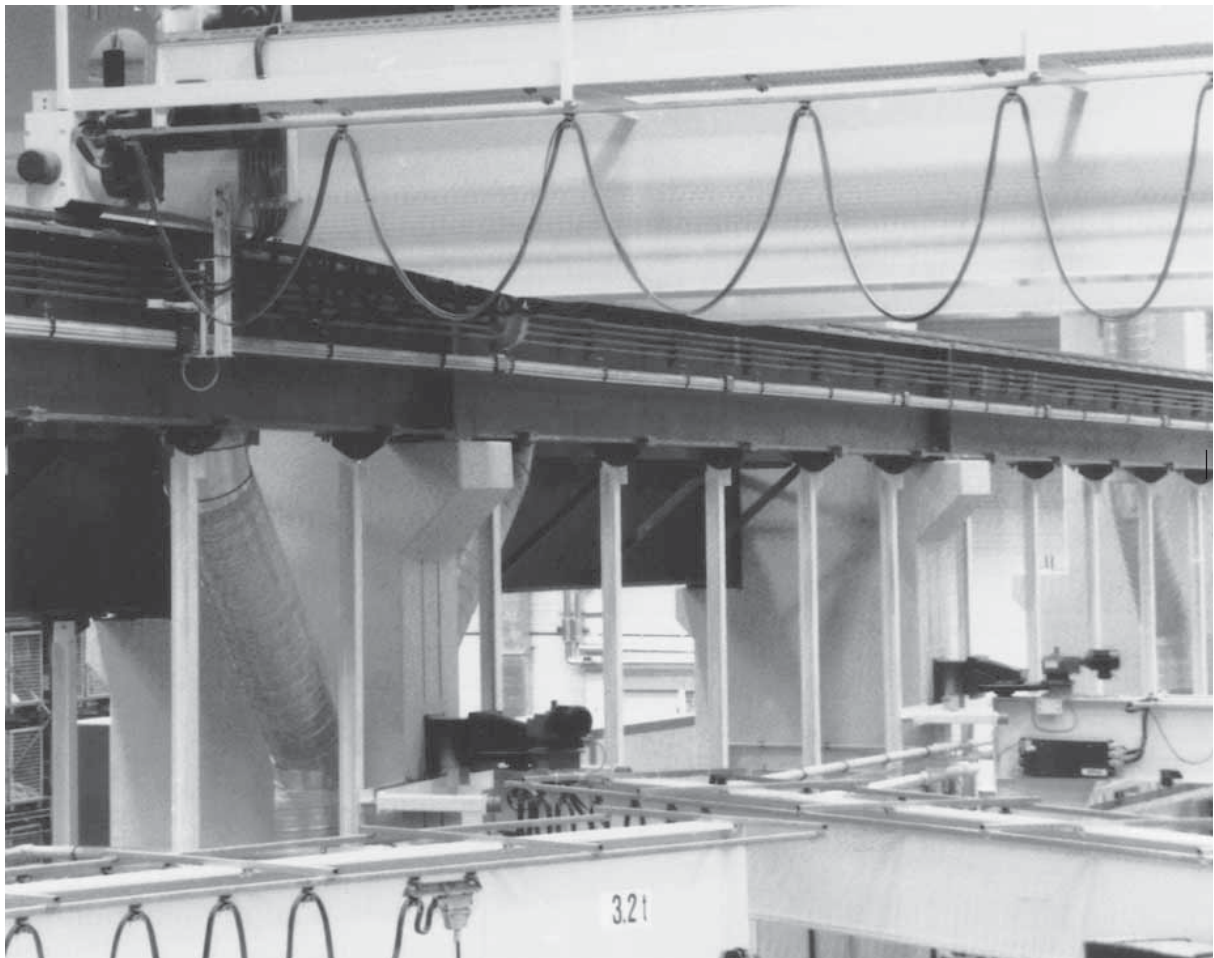
## Layout

Selection of the proper carriers and components must be based on the chosen cable (see our catalog 8L – Conductor Cables and Fittings) or hose data that meets your electrical and mechanical requirements.

Refer to the pages 47 – 52 or send us the completed Questionnaire on page 4. Prints or sketches for system layouts including curves would be appreciated whenever obtainable.

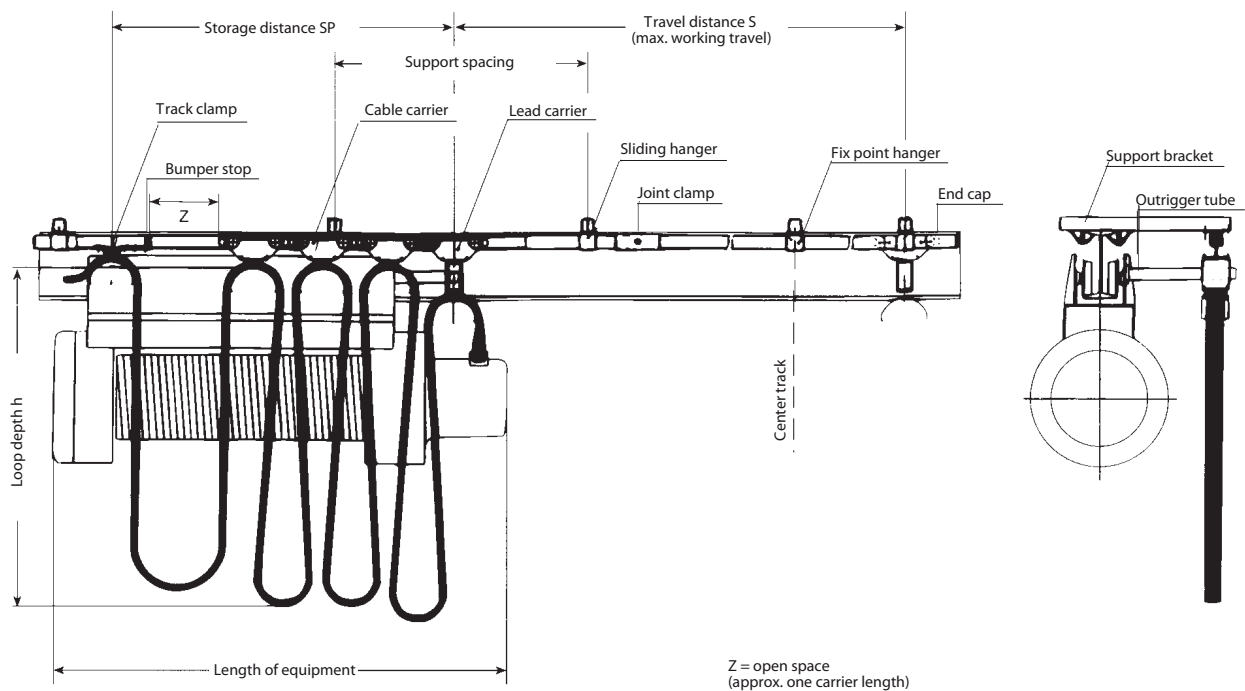
For extra heavy duty or arduous applications it is recommended to check in our catalogs 8b & 8c for our Innovative Festoon Technology on I-Beam tracks or 8d for Festoon Systems on diamond □ shaped tracks.

In any case we welcome your inquiries and guarantee our prompt quotations.





## QUESTIONNAIRE



Name and Address of Customer: \_\_\_\_\_

\_\_\_\_\_

Ref.: \_\_\_\_\_

1. Type of Application: \_\_\_\_\_

2. Outdoors ☐ Indoors ☐ \_\_\_\_\_

3. Temperature range \_\_\_\_\_

4. Is round or flatform cable envisaged? \_\_\_\_\_

5. How much space is available for storage? SP = \_\_\_\_\_ m

6. Is it possible to extend the track for the festoon cable system in case the length of equipment is insufficient for storage space?

☐ Yes, by \_\_\_\_\_ m; ☐ no, not possible.

7. Special operating conditions: \_\_\_\_\_

8. Length of equipment: \_\_\_\_\_ m

9. Travel distance: S = \_\_\_\_\_ m

10. Travel speed: V = \_\_\_\_\_ m/min

11. Acceleration: a = \_\_\_\_\_ m/s<sup>2</sup>

12. Max loop depth: h = \_\_\_\_\_ m

13. Hookup cable length required at Track clamp side: LE = \_\_\_\_\_ m

14. Hookup cable length required at Lead carrier side: LM = \_\_\_\_\_ m

### 15. Required cables:

| No. of cables | No. & Size of conductors | cable OD<br>ø mm | width x thickness<br>of flatform cables |
|---------------|--------------------------|------------------|-----------------------------------------|
|               |                          |                  |                                         |
|               |                          |                  |                                         |
|               |                          |                  |                                         |
|               |                          |                  |                                         |
|               |                          |                  |                                         |
|               |                          |                  |                                         |

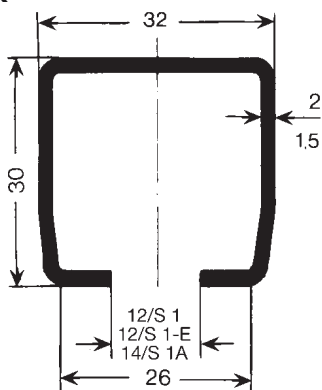


# S 1 TRACK AND ACCESSORIES

acid  
proof

Stain-  
less

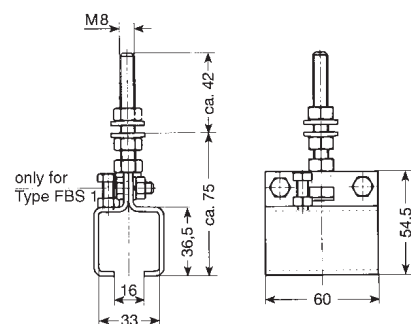
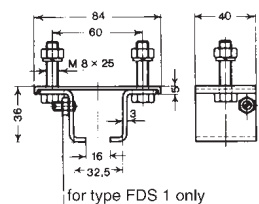
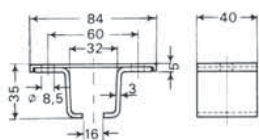
## Track



| Type                            | S1                                                              | S1A                 | S1-E                   |
|---------------------------------|-----------------------------------------------------------------|---------------------|------------------------|
| Order-No. -in 6 m sections      | 312 946                                                         | 312 966             | 312 956                |
| Order-No. -in 4 m sections      | 312 944                                                         | 312 964             | 312 954                |
| Order-No. -surcharge for curves | 310 470                                                         | -                   | 312 472                |
| <b>for Carrier type</b>         | <b>WS 1, WST 1</b>                                              |                     | <b>WST 1-E</b>         |
| Thickness                       | 2 mm                                                            | 1,5 mm              | 2 mm                   |
| Material                        | steel, galvanized                                               |                     | V 4 A, stainless steel |
| Supply lengths                  | 6 m and 4 m                                                     |                     |                        |
| <b>Standard support spacing</b> | As per Page 47, in straight system max. 2 m, in curves max. 1m. |                     |                        |
| Moment of inertia Jx            | 2,42 cm <sup>4</sup>                                            | 1,9 cm <sup>4</sup> | 2,42 cm <sup>4</sup>   |
| Section modulus Wx              | 1,45 cm <sup>3</sup>                                            | 1,1 cm <sup>3</sup> | 1,45 cm <sup>3</sup>   |
| Weight                          | 1,550 kg/m                                                      | 1,190 kg/m          | 1,550 kg/m             |

The delivery of curves is possible (excluded S1A).  
Please send us your inquiry.  
Max. system length: 100 m

## Hanger underhung



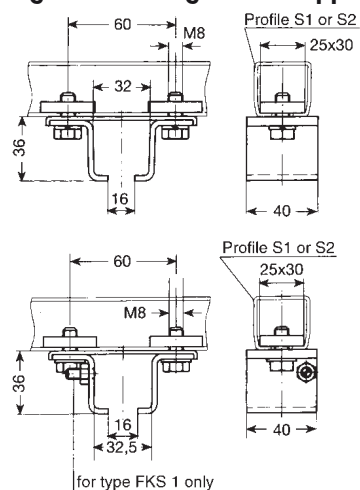
| Type      | Fixpoint hanger<br>FAS 1 |
|-----------|--------------------------|
| Order-No. | 310 500                  |
| Material  | steel, galvanized        |
| Weight    | 0,160 kg                 |

For up to 30 m runs only.  
1 pair of bolts M 8 x 25, Order-No. 310 510 to be ordered separately for each hanger or provided by customer.

| Type      | Sliding hanger<br>ADS 1 <sup>(1)</sup> | Fixpoint hanger<br>FDS 1 | Sliding hanger<br>ADS 1-E <sup>(1)</sup> | Fixpoint hanger<br>FDS 1-E |
|-----------|----------------------------------------|--------------------------|------------------------------------------|----------------------------|
| Order-No. | 310 370                                | 310 430                  | 312 393                                  | 312 394                    |
| Material  | steel, galvanized                      |                          | V 4 A, stainless steel                   |                            |
| Weight    | 0,200 kg                               | 0,210 kg                 | 0,200 kg                                 | 0,210 kg                   |

| Type      | Sliding hanger<br>ABS 1 <sup>(1)</sup> | Fixpoint hanger<br>FBS 1 |
|-----------|----------------------------------------|--------------------------|
| Order-No. | 312 863                                | 312 864                  |
| Material  | steel, galvanized                      |                          |
| Weight    | 0,226 kg                               | 0,234 kg                 |

## Hanger underhung for HK support



| Type      | Fixpoint hanger<br>FAKS 1 (clamp) |
|-----------|-----------------------------------|
| Order-No. | 310 590                           |
| Material  | steel, galvanized                 |
| Weight    | 0,260 kg                          |

For up to 30 m runs only.

| Type      | Sliding hanger<br>AKS 1 <sup>(1)</sup> | Fixpoint hanger<br>FKS 1 | Sliding hanger<br>AKS 1-E <sup>(1)</sup> | Fixpoint hanger<br>FKS 1-E |
|-----------|----------------------------------------|--------------------------|------------------------------------------|----------------------------|
| Order-No. | 310 380                                | 310 450                  | 312 457                                  | 312 458                    |
| Material  | steel, galvanized                      |                          | V 4 A, stainless steel                   |                            |
| Weight    | 0,260 kg                               | 0,270 kg                 | 0,260 kg                                 | 0,270 kg                   |

<sup>(1)</sup> For systems with control-carriers use fixpoint hangers only.

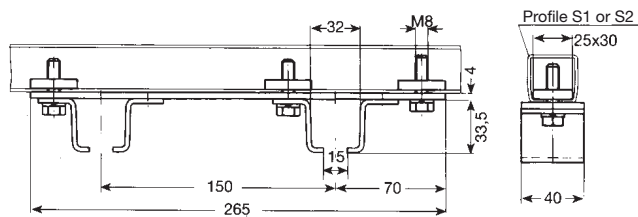


# S 1 ACCESSORIES

acid  
proof

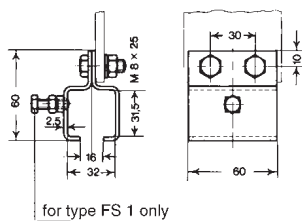
Stain-  
less

## Double Hanger for S 1 Track



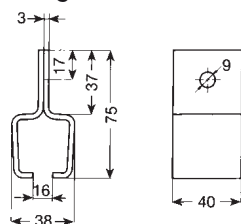
|           |                   |
|-----------|-------------------|
| Type      | DFAK-S 1 (clamp)  |
| Order-No. | 312 599           |
| Material  | steel, galvanized |
| Weight    | 0,660 kg          |

## Hanger lateral



| Type      | Sliding hanger AS 1 <sup>(1)</sup> | Fixpoint hanger FS 1 |
|-----------|------------------------------------|----------------------|
| Order-No. | 310 030                            | 310 040              |
| Material  | steel, galvan.                     | steel, galvan.       |
| Weight    | 0,220 kg                           | 0,230 kg             |

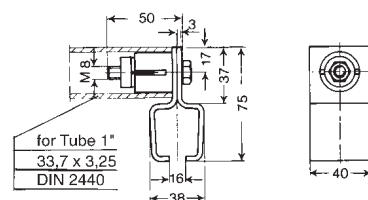
## Hanger lateral



|           |                                |
|-----------|--------------------------------|
| Type      | Fixpoint hanger FO-S 1 (clamp) |
| Order-No. | 312 809                        |
| Material  | steel, galvanized              |
| Weight    | 0,160 kg                       |

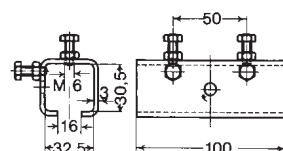
For up to 30 m runs only.

## Hanger for tube



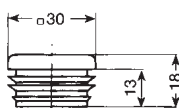
|           |                                  |
|-----------|----------------------------------|
| Type      | Fixpoint hanger FR 1-S 1 (clamp) |
| Order-No. | 310 991                          |
| Material  | steel, dowel: polyamid           |
| Weight    | 0,215 kg                         |

## Joint Clamp



| Type      | VS 1              | VS 1-E                 |
|-----------|-------------------|------------------------|
| Order-No. | 310 050           | 312 392                |
| Material  | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,340 kg          | 0,340 kg               |

## End Cap



|           |  |              |
|-----------|--|--------------|
| Type      |  | K 30         |
| Order-No. |  | 360 023      |
| Material  |  | polyethylene |
| Weight    |  | 0,008 kg     |

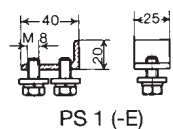


## S 1 ACCESSORIES

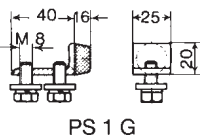
acid  
proof

Stain-  
less

### Bumper stop



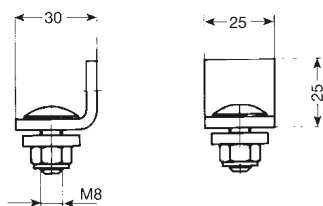
PS 1 (-E)



PS 1 G

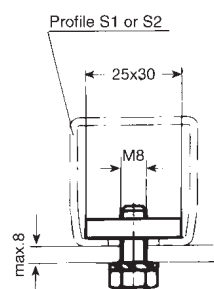
| Typ       | PS 1              | PS 1 G            | PS 1-E                 |
|-----------|-------------------|-------------------|------------------------|
| Order-No. | 310 300           | 310 360           | 312 395                |
| Material  | steel, galvanized | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,080 kg          | 0,100 kg          | 0,080 kg               |

### Bumper stop



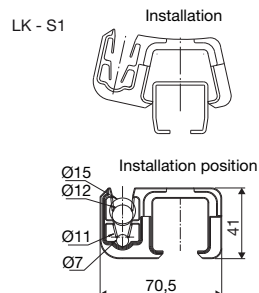
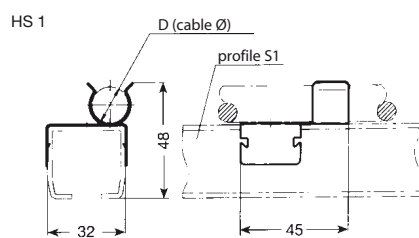
| Typ       | PS 1-1            |
|-----------|-------------------|
| Order-No. | 312 605           |
| Material  | steel, galvanized |
| Weight    | 0,063 kg          |

### Flat Nut w/bolt and washer



| Typ       | M 8 x 20          | M 8 x 20 E           |
|-----------|-------------------|----------------------|
| Order-No. | 312 600           | 313 454              |
| Material  | steel, galvanized | V4A, stainless steel |
| Weight    | 0,044 kg          | 0,044 kg             |

### Clamps for round cables and hoses



| Type      | Material  | Weight<br>kg | Dim. D<br>mm | Order-<br>No. |
|-----------|-----------|--------------|--------------|---------------|
| HS 1-D 9  | stainless | 0,010        | 8 - 10       | 312 667       |
| HS 1-D 16 | steel     | 0,011        | 15 - 20      | 312 666       |
| LK-S1     | PVC       | 0,010        | 7 - 15       | 313 379       |

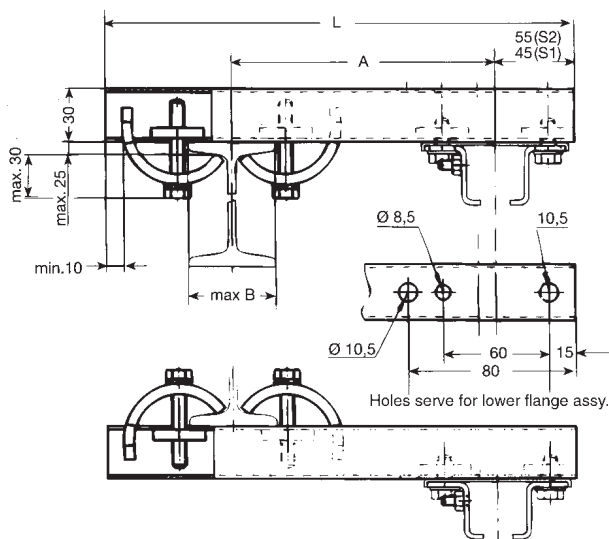


# S 1 ACCESSORIES

acid  
proof

Stain-  
less

## Standard Brackets



Choose dim. A per local requirements and make sure that hoist wheels have enough clearance.

Select next larger size bracket when your  
-Beam dim. B is more than 210 mm and refer to page 9 for heavy duty brackets.

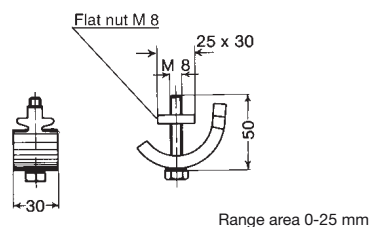
| Type   | Material            | Weight kg | A (adjustable) mm | L mm | max. B mm          | Order-No. | Type     | Mat.                      | Order-No. |
|--------|---------------------|-----------|-------------------|------|--------------------|-----------|----------|---------------------------|-----------|
| HK 200 | steel<br>galvanized | 0,980     | 200               | 400  | 210 <sup>(1)</sup> | 310 220   | HK 200-E | stainl.<br>steel<br>V 4 A | 312 510   |
| HK 300 |                     | 1,130     | 300               | 500  | 210 <sup>(1)</sup> | 310 230   | HK 300-E |                           | 312 511   |
| HK 400 |                     | 1,290     | 400               | 600  | 210 <sup>(1)</sup> | 310 240   | HK 400-E |                           | 312 512   |
| HK 500 |                     | 1,430     | 500               | 700  | 210 <sup>(1)</sup> | 310 250   | HK 500-E |                           | 312 513   |

Scope of supply: 1 pair of claws and rail short length S1.  
Hangers AKS 1, FKS 1 and FAKS 1 to be ordered separately.

## Bracket Bars for HK

| Type    | Material            | Weight kg | L mm | Order-No. | Type     | Mat.                      | Order-No. |
|---------|---------------------|-----------|------|-----------|----------|---------------------------|-----------|
| S 1-400 | steel<br>galvanized | 0,620     | 400  | 310 600   | S 1E-400 | stainl.<br>steel<br>V 4 A | 312 515   |
| S 1-500 |                     | 0,780     | 500  | 310 610   | S 1E-500 |                           | 312 516   |
| S 1-600 |                     | 0,930     | 600  | 310 620   | S 1E-600 |                           | 312 517   |
| S 1-700 |                     | 1,090     | 700  | 310 630   | S 1E-700 |                           | 312 518   |

## Claws for HK

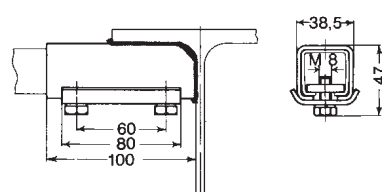


| Type      | SP 0-25           | SP 0-25-E              |
|-----------|-------------------|------------------------|
| Order-No. | 310 390           | 312 514                |
| Material  | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,200 kg          | 0,200 kg               |

Flat nut M 8 separately available.  
Order-No. 310 955

Flat nut M 8-E stainless  
separately available.  
Order-No. 312 545

## Support Attachment for HK



| Type      | AH 1              |
|-----------|-------------------|
| Order-No. | 310 400           |
| Material  | steel, galvanized |
| Weight    | 0,460 kg          |

Bracket bar and hangers to be ordered separately.

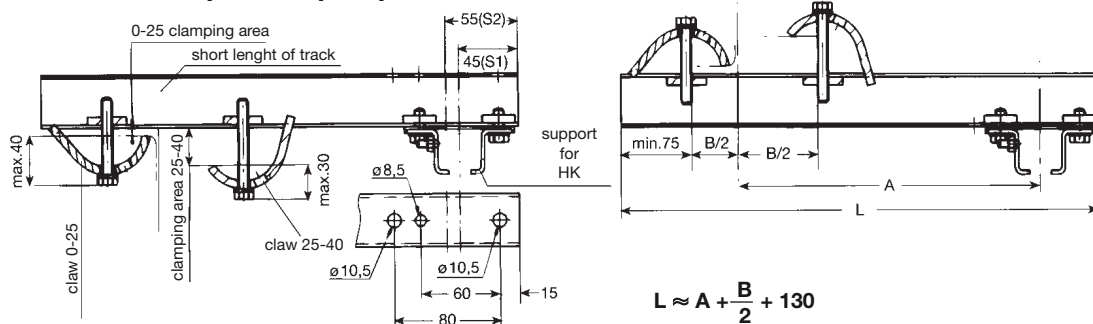


# S 1 ACCESSORIES

acid  
proof

Stain-  
less

## General Assembly of Heavy Duty Bracket



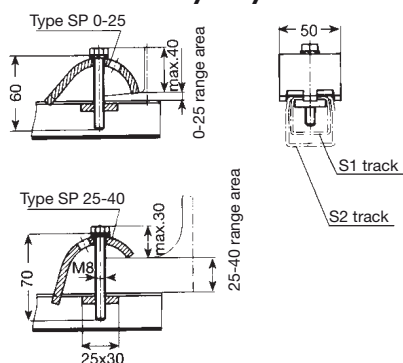
Dimension A is based on the width of the current consumer (e.g. the trolley). Please consider the running wheel diameter (flange) of the chassis in overhead monorails.

## Bracket Bars for HK heavy duty

The track sections are provided with drillings to fix the support hangers at the bottom flange of the track profile.

| Type     | Material            | Weight kg | Dim. L mm | Order-No. | Type      | Mat.-                     | Order-No. |
|----------|---------------------|-----------|-----------|-----------|-----------|---------------------------|-----------|
| S 2- 400 | steel<br>galvanized | 0,996     | 400       | 315 402   | S 2E- 400 | stainl.<br>steel<br>V 4 A | 316 513   |
| S 2- 500 |                     | 1,245     | 500       | 315 403   | S 2E- 500 |                           | 316 514   |
| S 2- 600 |                     | 1,494     | 600       | 315 404   | S 2E- 600 |                           | 316 515   |
| S 2- 700 |                     | 1,743     | 700       | 315 405   | S 2E- 700 |                           | 316 516   |
| S 2- 800 |                     | 1,992     | 800       | 315 406   | S 2E- 800 |                           | 316 517   |
| S 2- 900 |                     | 2,241     | 900       | 315 407   | S 2E- 900 |                           | 316 518   |
| S 2-1000 |                     | 2,490     | 1000      | 315 408   | S 2E-1000 |                           | 316 519   |
| S 2-1100 |                     | 2,739     | 1100      | 315 409   | S 2E-1100 |                           | 316 520   |
| S 2-1200 |                     | 2,988     | 1200      | 315 410   | S 2E-1200 |                           | 316 521   |

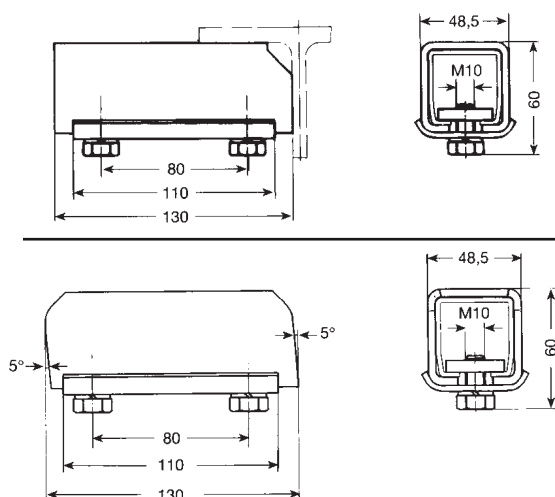
## Claws for HK heavy duty



| Type      | SP 0-25           | SP 0-25-E                |
|-----------|-------------------|--------------------------|
| Order-No. | 312 643           | 316 690                  |
| Material  | steel, galvanized | V 4 A, (stainless steel) |
| Weight    | 0,286 kg          | 0,286 kg                 |

| Type      | SP 25-40          | SP 25-40-E               |
|-----------|-------------------|--------------------------|
| Order-No. | 312 644           | 316 695                  |
| Material  | steel, galvanized | V 4 A, (stainless steel) |
| Weight    | 0,287 kg          | 0,287 kg                 |

## Support Attachment for HK heavy duty



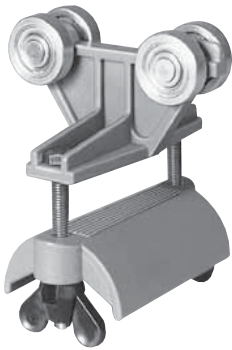
| Type      | AH 2     |
|-----------|----------|
| Order-No. | 310 989  |
| Material  | Stahl    |
| Weight    | 0,940 kg |

| Type      | AH 2-2   |
|-----------|----------|
| Order-No. | 312 648  |
| Material  | Stahl    |
| Weight    | 0,854 kg |



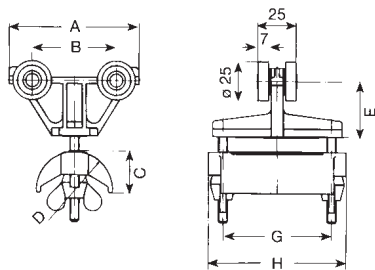
# S 1 CABLE CARRIERS AND ACCESSORIES

– Polyamid type –



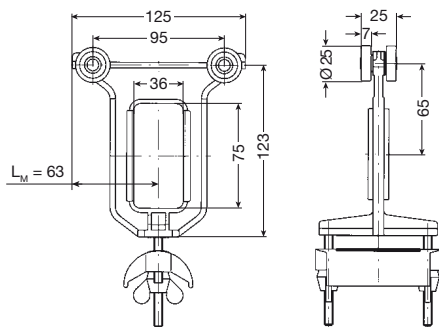
## Engineering Data

| Type                | WS 1 F <sup>(3)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheels              | <p>A) Polyamid rollers on bushed bearing; axle galvanized<br/>Material: polyamid, Travelling speed: ca. 50 m/min.</p> <p>B) Polyamid rollers on stainless bushed bearing<br/>Material: polyamid, Travelling speed: ca. 50 m/min.</p> <p>C) Polyamid rollers with ball bearing; inner race hardened, galvanized<br/>outer race Polyamid, Travelling speed: ca. 60 m/min.</p> <p>D) hardened and galvanized steel rollers with precision ball bearing,<br/>sealed against dust and splash water.<br/>Temperature resistance: lub. grease of wheels: –30° C to +125° C<br/>Travelling speed: ca. 80 m/min.</p> |
| Material            | <p>Carrier body: Polyamid</p> <p>Support saddle: Polyamid</p> <p>Hardware: galvanized</p> <p>Temperature resistance: – 30° C to +100° C</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Max. cable load     | <p>max. 8 kg per Carrier with roller A</p> <p>max. 10 kg per Carrier with roller B + C</p> <p>max. 16 kg per Carrier with roller D</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| for corrosive sites | use system S 1-E or K1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



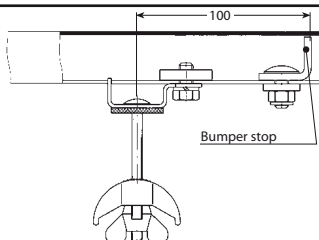
## Cable Carriers for flatform cables

| Type             | wheels | max. thickness of individual cable mm | max. clamping capacity mm height x width | A   | B  | C  | D  | E  | G  | H  | Weight kg | Order No. <sup>(1)</sup> | with patented nut Order-No. <sup>(2)</sup> |
|------------------|--------|---------------------------------------|------------------------------------------|-----|----|----|----|----|----|----|-----------|--------------------------|--------------------------------------------|
| WS 1 F/ 85 G     | A      | 8                                     | 17 x 65                                  | 85  | 55 | 25 | 50 | 37 | 71 | 90 | 0,120     | 310 958                  | 312 686                                    |
| WS 1 F/ 85 K     | B      |                                       |                                          |     |    |    |    |    |    |    | 0,130     | 310 180                  | 312 687                                    |
| WS 1 F/ 85 KL    | C      |                                       |                                          |     |    |    |    |    |    |    | 0,130     | 310 320                  | 312 688                                    |
| WS 1 F/ 85       | D      |                                       |                                          |     |    |    |    |    |    |    | 0,190     | 310 070                  | 312 689                                    |
| WS 1 F/125-50 G  | A      | 8                                     | 37 x 65                                  | 125 | 95 | 40 | 50 | 37 | 71 | 90 | 0,150     | 312 759                  | 312 760                                    |
| WS 1 F/125-50 K  | B      |                                       |                                          |     |    |    |    |    |    |    | 0,160     | 312 761                  | 312 762                                    |
| WS 1 F/125-50 KL | C      |                                       |                                          |     |    |    |    |    |    |    | 0,160     | 312 763                  | 312 764                                    |
| WS 1 F/125-50    | D      |                                       |                                          |     |    |    |    |    |    |    | 0,220     | 312 765                  | 312 766                                    |
| WS 1 F/125-80 G  | A      | 10                                    | 22 x 65                                  | 125 | 95 | 40 | 80 | 37 | 71 | 90 | 0,170     | 312 767                  | 312 768                                    |
| WS 1 F/125-80 K  | B      |                                       |                                          |     |    |    |    |    |    |    | 0,180     | 312 769                  | 312 770                                    |
| WS 1 F/125-80 KL | C      |                                       |                                          |     |    |    |    |    |    |    | 0,180     | 312 771                  | 312 772                                    |
| WS 1 F/125-80    | D      |                                       |                                          |     |    |    |    |    |    |    | 0,240     | 312 773                  | 312 774                                    |



## Lead Carriers for flatform cables

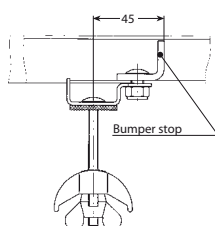
| Type             | wheels | for Carrier type                                 | Weight kg | Order No. <sup>(1)</sup> | with patented nut Order-No. <sup>(2)</sup> |
|------------------|--------|--------------------------------------------------|-----------|--------------------------|--------------------------------------------|
| MS 1 F/125-50 G  | A      | WS 1 F/ 85 G, WS 1 F/125-50 G                    | 0,140     | 313 281                  | 313 285                                    |
| MS 1 F/125-50 K  | B      | WS 1 F/ 85 (K, G), WS 1 F/125-50 (K, G)          | 0,144     | 313 280                  | 313 284                                    |
| MS 1 F/125-50 KL | C      | WS 1 F/ 85 (KL, K, G), WS 1 F/125-50 (KL, K, G)  | 0,158     | 313 279                  | 313 283                                    |
| MS 1 F/125-50    | D      | WS 1 F/ 85 (all types) WS 1 F/125-50 (all types) | 0,200     | 313 278                  | 313 282                                    |
| MS 1 F/125-80 G  | A      | WS 1 F/125-80 G                                  | 0,156     | 313 293                  | 313 297                                    |
| MS 1 F/125-80 K  | B      | WS 1 F/125-80 (K, G)                             | 0,162     | 313 292                  | 313 296                                    |
| MS 1 F/125-80 KL | C      | WS 1 F/125-80 (KL, K, G)                         | 0,174     | 313 291                  | 313 295                                    |
| MS 1 F/125-80    | D      | WS 1 F/125-80 (all types)                        | 0,216     | 313 290                  | 313 294                                    |



## Track Clamps for flatform cables

| Type          | for Carrier type                                    | Weight kg | Order No. <sup>(1)</sup> | with patented nut Type | Order-No. |
|---------------|-----------------------------------------------------|-----------|--------------------------|------------------------|-----------|
| ES 1 F/ 85    | WS 1 F/ 85 (all types)<br>WS 1 F/125-50 (all types) | 0,220     | 313 303                  | EST 1-2 F/ 85-PM       | 313 304   |
| ES 1 F/125-80 | WS 1 F/125-80 (all types)                           | 0,240     | 313 307                  | EST 1-2 F/125-PM       | 313 308   |

Bumper stop PS 1, PS 1-1, PS 1 G to be ordered separately.



## Track Clamp with bumper for flatform cables

| Type        | for Carrier type       | Weight kg | Order-No. <sup>(1)</sup> | with patented nut Type | Order-No. |
|-------------|------------------------|-----------|--------------------------|------------------------|-----------|
| EP S1 F/ 85 | WS 1 F/ 85 (all types) | 0,230     | 313 305                  | EPST 1-2 F/85-PM       | 313 306   |

<sup>(1)</sup> hex. nut type

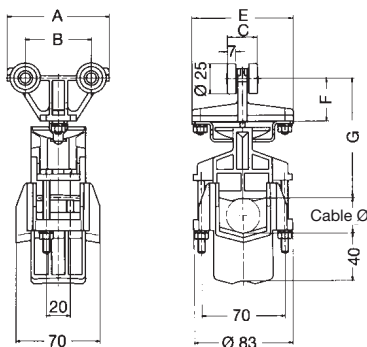
<sup>(2)</sup> with patented quick-set nut use suffix PM, e.g. WS 1 F/85-PM for Order-No. 312 689

<sup>(3)</sup> not suitable for curved track



# S 1 CABLE CARRIERS AND ACCESSORIES

- Polyamid swivel type -

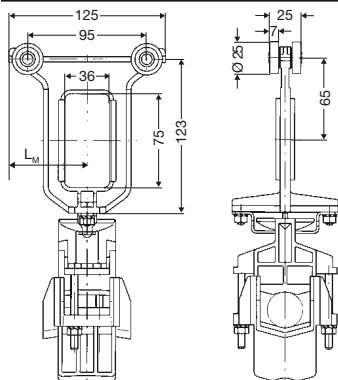


## Engineering Data

| Type                | WS 1 R <sup>(1)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheels              | A) Polyamid rollers on bushed bearing; axle galvanized<br>Material: polyamid, Travelling speed: ca. 50 m/min.<br>B) Polyamid rollers on stainless bushed bearing<br>Material: polyamid, Travelling speed: ca. 50 m/min.n.<br>C) Polyamid rollers with ball bearing; inner race hardened, galvanized<br>outer race Polyamid, Travelling speed: ca. 60 m/min.<br>D) hardened and galvanized steel rollers with precision ball bearing,<br>sealed against dust and splash water<br>Temperature resistance: lub. grease of wheels: -30° C to +125° C<br>Travelling speed: ca. 80 m/min. |
| Material            | Carrier body: Polyamid<br>Support saddle: Polyamid<br>Hardware: galvanized<br>Temperature resistance: - 30° C to +100° C                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Max. cable load     | max. •8 kg per Carrier with roller A<br>max. 10 kg per Carrier with roller B + C<br>max. 16 kg per Carrier with roller D                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| for corrosive sites | use system S 1-E or K1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## Cable Carriers for round cables and hoses

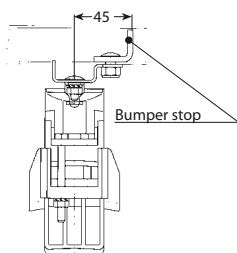
| Type         | Cable Ø       | Wheels | A  | B  | C  | D  | E  | F  | G  | Weight kg | Order-No. |
|--------------|---------------|--------|----|----|----|----|----|----|----|-----------|-----------|
| WS 1 R/85 G  | 5 mm to 38 mm | A      | mm |    |    |    |    |    |    | 0,260     | 313 332   |
| WS 1 R/85 K  |               | B      |    |    |    |    |    |    |    | 0,270     | 312 486   |
| WS 1 R/85 KL |               | C      | 85 | 55 | 25 | 25 | 85 | 36 | 99 | 0,280     | 312 487   |
| WS 1 R/85    |               | D      |    |    |    |    |    |    |    | 0,320     | 312 485   |



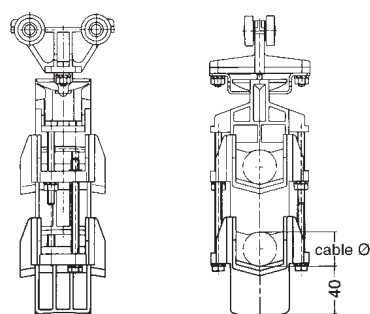
## Lead Carriers for round cables and hoses

| Type          | for Carrier type      | Lm | Weight kg | Order-No. |
|---------------|-----------------------|----|-----------|-----------|
| MS 1 R/125 G  | WS 1 R/85 G           | 63 | 0,284     | 313 289   |
| MS 1 R/125 K  | WS 1 R/85 (K, G)      | 63 | 0,288     | 313 288   |
| MS 1 R/125 KL | WS 1 R/85 (KL, K, G)  | 63 | 0,302     | 313 287   |
| MS 1 R/125    | WS 1 R/85 (all types) | 63 | 0,304     | 313 286   |

## Track Clamp for round cables and hoses



| Type       | for Carrier type   | Weight kg | Order-No. |
|------------|--------------------|-----------|-----------|
| EPST 1-2 R | WS 1 R (all types) | 0,346     | 313 322   |



## Support Saddle for round cables and hoses for additional tiers

| Type | for Carrier type   | Weight kg | Order-No. |
|------|--------------------|-----------|-----------|
| LAR  | WS 1 R (all types) | 0,110     | 312 500   |

<sup>(1)</sup> not suitable for curved track



# S 1 CABLE CARRIERS – Steel type –

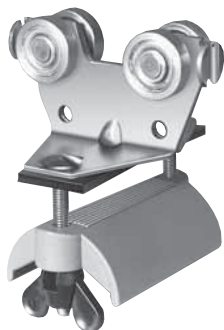


acid  
proof

Stain-  
less



Support saddle  
with hex. nut

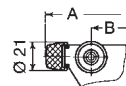


Support saddle  
with patented nut

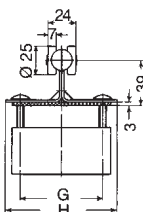
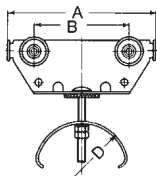
## Engineering Data

| Type                | WST 1 F                                                                                                                                                                               | WST 1 F-E                                                                            | WST 1 F K-E                                                                                                  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Wheels              | ball bearings sealed against dust and splash water hardened, galvanized<br>Temperature resistance Lub. grease of wheels: -30° C to +125° C<br>Travelling speed: ca. 80 m/min.         | sealed ball bearings<br>stainless steel, V 4 A<br>-30° C to +150° C<br>ca. 80 m/min. | Polyamid rollers<br>on bushed bearing<br>ca. 50 m/min.                                                       |
| Material            | Carrier body: steel, galvanized<br>Support saddle: steel, galvanized<br>D = 140 – aluminium<br>Bumper: Neoprene<br>Hardware: galvanized<br>Temperature resistance: - 30° C to +100° C | with patented nut<br>Support saddle<br>Polyamid                                      | V 4 A, stainless steel<br>V 4 A, stainless steel<br>Neoprene<br>V 4 A, stainless steel<br>- 30° C to + 80° C |
| Max. cable load     | max. 22 kg per carrier                                                                                                                                                                | max. 12 kg per carrier                                                               | max. 8 kg per carrier                                                                                        |
| Depth of cable loop | in curves max. 0,3 x track radius,<br>consider tension relief                                                                                                                         |                                                                                      | not in curves                                                                                                |
| for corrosive sites | use system S 1-E or K 1                                                                                                                                                               |                                                                                      |                                                                                                              |

## Cable Carriers for flatform cables



Bumper type



| Type                           | max. thickn. of individual cable mm | max. clamping capacity in mm<br>height x width | A   | B   | Ø D | G  | H  | Weight kg | Order-No. | with patented nut Order-No <sup>(2)</sup> | Type                            | Order-No. | Type                              | Order-No. |
|--------------------------------|-------------------------------------|------------------------------------------------|-----|-----|-----|----|----|-----------|-----------|-------------------------------------------|---------------------------------|-----------|-----------------------------------|-----------|
| WST 1 F/ 85 <sup>(1)</sup>     | 8                                   | 17 x 65                                        | 85  | 43  | 50  | 85 | 85 | 0,360     | 312 000   | 312 789                                   | WST 1 F/ 85 E <sup>(1)</sup>    | 312 381   | WST 1 F/ 85 K-E <sup>(1)</sup>    | 313 218   |
| WST 1 F/ 85 P                  |                                     | 29 x 65                                        | 110 |     |     |    |    | 0,370     | 312 010   | 312 790                                   | WST 1 F/ 85P-E                  | 312 387   | WST 1 F/ 85 KP-E                  | 313 219   |
| WST 1 F/125-50 <sup>(1)</sup>  |                                     | 37 x 65                                        | 125 |     |     |    |    | 0,460     | 312 533   | 312 791                                   | WST 1 F/125-50-E <sup>(1)</sup> | 312 519   | WST 1 F/125-50K-E <sup>(1)</sup>  | 313 221   |
| WST 1 F/125-50 P               | 10                                  | 50 x 65                                        | 150 | 80  | 80  | 97 | 97 | 0,470     | 312 534   | 312 792                                   | WST 1 F/125-50P-E               | 312 520   | WST 1 F/125-50KP-E                | 313 222   |
| WST 1 F/125 <sup>(1)</sup>     |                                     | 22 x 65                                        | 125 |     |     |    |    | 0,520     | 312 020   | 312 793                                   | WST 1 F/125-E <sup>(1)</sup>    | 312 384   | WST 1 F/125 K-E <sup>(1)</sup>    | 313 223   |
| WST 1 F/125 P                  |                                     | 34 x 65                                        | 150 |     |     |    |    | 0,530     | 312 030   | 312 794                                   | WST 1 F/125P-E                  | 312 388   | WST 1 F/125 KP-E                  | 313 224   |
| WST 1 F/150-50 <sup>(1)</sup>  | 8                                   | 50 x 65                                        | 150 | 105 | 50  | 71 | 85 | 0,480     | 312 537   | 312 795                                   | WST 1 F/150-50-E <sup>(1)</sup> | 312 560   | WST 1 F/150-50 K-E <sup>(1)</sup> | 313 225   |
| WST 1 F/150-50 P               |                                     | 62 x 65                                        | 175 |     |     |    |    | 0,490     | 312 538   | 312 796                                   | WST 1 F/150-50P-E               | 312 561   | WST 1 F/150-50 KP-E               | 313 226   |
| WST 1 F/150-80 <sup>(1)</sup>  |                                     | 35 x 65                                        | 150 |     |     |    |    | 0,540     | 312 539   | 312 797                                   | WST 1 F/150-80-E <sup>(1)</sup> | 312 562   | WST 1 F/150-80 K-E <sup>(1)</sup> | 313 227   |
| WST 1 F/150-80 P               | 10                                  | 47 x 65                                        | 175 |     |     |    |    | 0,550     | 312 540   | 312 798                                   | WST 1 F/150-80P-E               | 312 563   | WST 1 F/150-80 KP-E               | 313 228   |
| WST 1 F/150 <sup>(1)</sup>     |                                     | 25 x 65                                        | 150 | 100 | 85  | 85 | 85 | 0,580     | 312 040   |                                           | WST 1 F/150-E <sup>(1)</sup>    | 312 564   | WST 1 F/150 K-E                   | 313 229   |
| WST 1 F/150 P                  |                                     | 37 x 65                                        | 175 |     |     |    |    | 0,590     | 312 050   |                                           | WST 1 F/150P-E                  | 312 565   | WST 1 F/150 KP-E                  | 313 230   |
| WST 1 F/200-100 <sup>(1)</sup> | 12                                  | 50 x 65                                        | 200 |     |     |    |    | 0,680     | 312 831   |                                           |                                 |           |                                   |           |
| WST 1 F/200-100 P              |                                     | 62 x 65                                        | 225 |     |     |    |    | 0,700     | 312 832   |                                           |                                 |           |                                   |           |
| WST 1 F/200-140 <sup>(1)</sup> |                                     | 30 x 65                                        | 200 | 155 | 140 | 85 | 85 | 0,670     | 312 833   |                                           |                                 |           |                                   |           |
| WST 1 F/200-140 P              | 14                                  | 42 x 65                                        | 225 |     |     |    |    | 0,680     | 312 834   |                                           |                                 |           |                                   |           |
| WST 1 F/250-140 <sup>(1)</sup> |                                     | 55 x 65                                        | 250 |     |     |    |    | 0,740     | 312 835   |                                           |                                 |           |                                   |           |
| WST 1 F/250-140 P              |                                     | 67 x 65                                        | 275 | 205 |     |    |    | 0,750     | 312 836   |                                           |                                 |           |                                   |           |



# S 1 LEAD CARRIERS AND TRACK CLAMPS – Steel type –



acid  
proof

Stain-  
less

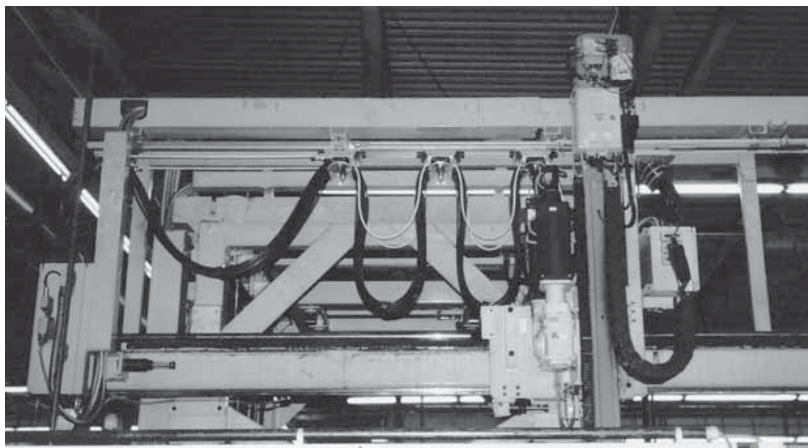
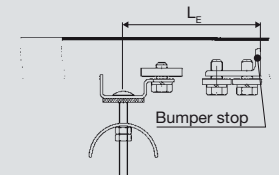
## Lead Carriers for flatform cables

| Type                           | for Carrier type  | L <sub>M</sub> | A mm | Weight kg | Order-No. | with patented nut Order-No. <sup>(2)</sup> | Type                            | Order-No. | Type                              | Order-No. |
|--------------------------------|-------------------|----------------|------|-----------|-----------|--------------------------------------------|---------------------------------|-----------|-----------------------------------|-----------|
| MST 1 F/ 85 <sup>(1)</sup>     | WST 1 F/ 85       | 43             | 85   | 0,730     | 312 080   | 312 799                                    | MST 1 F/ 85-E <sup>(1)</sup>    | 312 382   | MST 1 F/ 85 K-E <sup>(1)</sup>    | 313 231   |
| MST 1 F/ 85 P                  | WST 1 F/ 85 P     | 55             | 110  | 0,740     | 312 090   | 312 800                                    | MST 1 F/ 85 P-E                 | 312 389   | MST 1 F/ 85 KP-E                  | 313 232   |
| MST 1 F/125-50 <sup>(1)</sup>  | WST 1 F/125-50    | 63             | 125  | 0,830     | 312 535   | 312 801                                    | MST 1 F/125-50-E <sup>(1)</sup> | 312 521   | MST 1 F/125-50 K-E <sup>(1)</sup> | 313 233   |
| MST 1 F/125-50 P               | WST 1 F/125-50 P  | 75             | 150  | 0,840     | 312 536   | 312 802                                    | MST 1 F/125-50 P-E              | 312 522   | MST 1 F/125-50 KP-E               | 313 234   |
| MST 1 F/125 <sup>(1)</sup>     | WST 1 F/125       | 63             | 125  | 0,880     | 312 100   | 312 803                                    | MST 1 F/125-E <sup>(1)</sup>    | 312 385   | MST 1 F/125 K-E <sup>(1)</sup>    | 313 235   |
| MST 1 F/125 P                  | WST 1 F/125 P     | 75             | 150  | 0,890     | 312 110   | 312 804                                    | MST 1 F/125 P-E                 | 312 390   | MST 1 F/125 KP-E                  | 313 236   |
| MST 1 F/150-50 <sup>(1)</sup>  | WST 1 F/150-50    | 75             | 150  | 0,850     | 312 541   | 312 805                                    | MST 1 F/150-50-E <sup>(1)</sup> | 312 566   | MST 1 F/150-50 K-E <sup>(1)</sup> | 313 237   |
| MST 1 F/150-50 P               | WST 1 F/150-50 P  | 88             | 175  | 0,860     | 312 542   | 312 806                                    | MST 1 F/150-50 P-E              | 312 567   | MST 1 F/150-50 KP-E               | 313 238   |
| MST 1 F/150-80 <sup>(1)</sup>  | WST 1 F/150-80    | 75             | 150  | 0,900     | 312 543   | 312 807                                    | MST 1 F/150-80-E <sup>(1)</sup> | 312 568   | MST 1 F/150-80 K-E <sup>(1)</sup> | 313 239   |
| MST 1 F/150-80 P               | WST 1 F/150-80 P  | 88             | 175  | 0,910     | 312 544   | 312 808                                    | MST 1 F/150-80 P-E              | 312 569   | MST 1 F/150-80 KP-E               | 313 240   |
| MST 1 F/150 <sup>(1)</sup>     | WST 1 F/150       | 75             | 150  | 0,950     | 312 120   |                                            | MST 1 F/150-E <sup>(1)</sup>    | 312 570   | MST 1 F/150 K-E <sup>(1)</sup>    | 313 241   |
| MST 1 F/150 P                  | WST 1 F/150 P     | 88             | 175  | 0,960     | 312 130   |                                            | MST 1 F/150 P-E                 | 312 571   | MST 1 F/150 KP-E                  | 313 242   |
| MST 1 F/200-100 <sup>(1)</sup> | WST 1 F/200-100   | 100            | 200  | 1,050     | 312 837   |                                            |                                 |           |                                   |           |
| MST 1 F/200-100 P              | WST 1 F/200-100 P | 113            | 225  | 1,070     | 312 838   |                                            |                                 |           |                                   |           |
| MST 1 F/200-140 <sup>(1)</sup> | WST 1 F/200-140   | 100            | 200  | 1,030     | 312 839   |                                            |                                 |           |                                   |           |
| MST 1 F/200-140 P              | WST 1 F/200-140 P | 113            | 225  | 1,040     | 312 840   |                                            |                                 |           |                                   |           |
| MST 1 F/250-140 <sup>(1)</sup> | WST 1 F/250-140   | 125            | 250  | 1,110     | 312 841   |                                            |                                 |           |                                   |           |
| MST 1 F/250-140 P              | WST 1 F/250-140 P | 138            | 275  | 1,120     | 312 842   |                                            |                                 |           |                                   |           |

## Track Clamps for flatform cables

| Type            | for Carrier type    | L <sub>E</sub> mm | Weight kg | Order-No. | with patented nut Order-No. <sup>(2)</sup> | Type            | Order-No. |
|-----------------|---------------------|-------------------|-----------|-----------|--------------------------------------------|-----------------|-----------|
| EST 1-2 F/ 85   | WST 1 F/ 85 (P)     | 140               | 0,290     | 313 315   | 313 304                                    | EST 1-2 F/ 85-E | 312 383   |
|                 | WST 1 F/125-50 (P)  |                   |           |           |                                            |                 |           |
|                 | WST 1 F/150-50 (P)  |                   |           |           |                                            |                 |           |
| EST 1-2 F/125   | WST 1 F/125 (P)     | 140               | 0,370     | 313 316   | 313 308                                    | EST 1-2 F/125-E | 312 386   |
|                 | WST 1 F/150-80 (P)  |                   |           |           |                                            |                 |           |
| EST 1-2 F/150   | WST 1 F/150 (P)     | 140               | 0,410     | 313 317   |                                            | EST 1-2 F/150-E | 312 572   |
| EST 1-2 F/100-2 | WST 1 F/200-100 (P) |                   | 0,410     | 313 318   |                                            |                 |           |
| EST 1-2 F/140-2 | WST 1 F/200-140 (P) |                   | 0,430     | 313 319   |                                            |                 |           |
|                 | WST 1 F/250-140 (P) | 165               |           |           |                                            |                 |           |

Bumper stop PS 1, PS 1-1, PS 1 G or PS 1-E to be ordered separately.



VAHLE Festoon feeding robotic production.

<sup>(1)</sup> without Bumper

<sup>(2)</sup> with patented quick-set nut use suffix PM



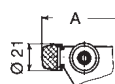
# LS 1 CABLE CARRIERS AND ACCESSORIES – Steel type –



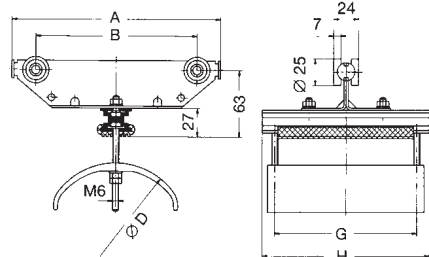
## Engineering Data

| Type                | WST 1 F                                                                                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheels              | ball bearings sealed against dust and splash water<br>hardened, galvanized<br>Temperature resistance Lub. grease of wheels: -30° C to +125° C<br>Travelling speed: ca. 80 m/min.        |
| Material            | Carrier body: steel, galvanized<br>Support saddle: steel, galvanized; D = 100 & 140 aluminium<br>Bumper: Neoprene<br>Hardware: galvanized<br>Temperature resistance: - 30° C to +100° C |
| Max. cable load     | max. 22 kg per carrier                                                                                                                                                                  |
| Depth of cable loop | in curves max. 0,3 x track radius,<br>consider tension relief                                                                                                                           |
| for corrosive sites | use system S 1-E or K 1                                                                                                                                                                 |

## Cable Carriers for flatform cables

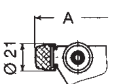


Bumper type

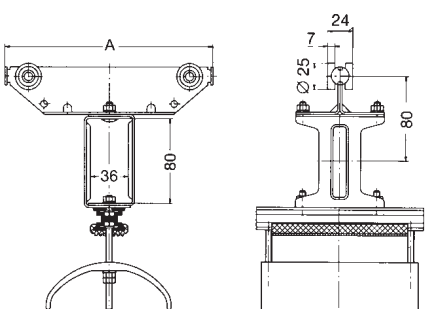


| Type                                 | max.<br>thickn. of<br>individual<br>cable mm | max. clamping<br>capacity in<br>mm<br>height x width | A   | B   | Ø D | G   | H   | Weight<br>kg | Order-<br>No. |
|--------------------------------------|----------------------------------------------|------------------------------------------------------|-----|-----|-----|-----|-----|--------------|---------------|
| WST 1 F/125-50 B <sup>(1)</sup>      | 8                                            | 37 x 100                                             | 125 | 80  | 50  | 110 | 134 | 0,630        | 312 902       |
| WST 1 F/125-50 B P                   |                                              | 50 x 100                                             | 150 |     | 80  |     |     | 0,640        | 312 903       |
| WST 1 F/125-80 B <sup>(1)</sup>      | 10                                           | 22 x 100                                             | 125 | 80  | 80  | 110 | 134 | 0,720        | 312 904       |
| WST 1 F/125-80 B P                   |                                              | 34 x 100                                             | 150 |     | 80  |     |     | 0,730        | 312 905       |
| WST 1 F/150-100 B 160 <sup>(1)</sup> | 12                                           | 25 x 130                                             | 150 | 105 | 100 | 136 | 160 | 0,750        | 312 845       |
| WST 1 F/150-100 B 160 P              |                                              | 37 x 130                                             | 175 |     |     |     |     | 0,760        | 312 846       |
| WST 1 F/200-100 B 160 <sup>(1)</sup> | 14                                           | 50 x 130                                             | 200 | 155 | 140 | 136 | 160 | 0,840        | 312 847       |
| WST 1 F/200-100 B 160 P              |                                              | 62 x 130                                             | 225 |     |     |     |     | 0,850        | 312 848       |
| WST 1 F/200-140 B 160 <sup>(1)</sup> | 14                                           | 30 x 130                                             | 200 | 205 | 140 | 136 | 160 | 0,970        | 312 849       |
| WST 1 F/200-140 B 160 P              |                                              | 42 x 130                                             | 225 |     |     |     |     | 0,980        | 312 850       |
| WST 1 F/250-140 B 160 <sup>(1)</sup> | 14                                           | 55 x 130                                             | 250 | 205 | 140 | 136 | 160 | 1,040        | 312 851       |
| WST 1 F/250-140 B 160 P              |                                              | 67 x 130                                             | 275 |     |     |     |     | 1,050        | 312 852       |

## Lead Carriers for flatform cables

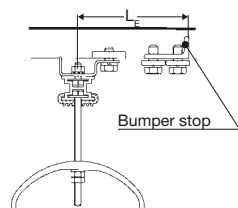


Bumper type



| Type                                 | for<br>Carrier type     | A<br>mm | Weight<br>kg | Order-<br>No. |
|--------------------------------------|-------------------------|---------|--------------|---------------|
| MST 1 F/125-50 B <sup>(1)</sup>      | WST 1 F/125-50 B        | 125     | 1,000        | 312 906       |
| MST 1 F/125-50 B P                   | WST 1 F/125-50 B P      | 150     | 1,010        | 312 907       |
| MST 1 F/125-80 B <sup>(1)</sup>      | WST 1 F/125-80 B        | 125     | 1,080        | 312 908       |
| MST 1 F/125-80 B P                   | WST 1 F/125-80 B P      | 150     | 1,090        | 312 909       |
| MST 1 F/150-100 B 160 <sup>(1)</sup> | WST 1 F/150-100 B 160   | 150     | 1,100        | 312 853       |
| MST 1 F/150-100 B 160 P              | WST 1 F/150-100 B 160 P | 175     | 1,110        | 312 854       |
| MST 1 F/200-100 B 160 <sup>(1)</sup> | WST 1 F/200-100 B 160   | 200     | 1,190        | 312 855       |
| MST 1 F/200-100 B 160 P              | WST 1 F/200-100 B 160 P | 225     | 1,200        | 312 856       |
| MST 1 F/200-140 B 160 <sup>(1)</sup> | WST 1 F/200-140 B 160   | 200     | 1,330        | 312 857       |
| MST 1 F/200-140 B 160 P              | WST 1 F/200-140 B 160 P | 225     | 1,340        | 312 858       |
| MST 1 F/250-140 B 160 <sup>(1)</sup> | WST 1 F/250-140 B 160   | 250     | 1,390        | 312 859       |
| MST 1 F/250-140 B 160 P              | WST 1 F/250-140 B 160 P | 275     | 1,400        | 312 860       |

## Track Clamps for flatform cables



Bumper stop PS 1, PS 1-1, PS 1 G  
to be ordered separately.

| Type                | for<br>Carrier type       | Le<br>mm | Weight<br>kg | Order-<br>No. |
|---------------------|---------------------------|----------|--------------|---------------|
| EST 1-2 F/125-50 B  | WST 1 F/125-50 B (P)      | 140      | 0,470        | 313 313       |
| EST 1-2 F/125-80 B  | WST 1 F/125-80 B (P)      |          | 0,520        | 313 314       |
| EST 1-2 F/100 B 160 | WST 1 F/150-100 B 160 (P) | 140      | 0,560        | 313 311       |
|                     | WST 1 F/200-100 B 160 (P) | 155      |              |               |
| EST 1-2 F/140 B 160 | WST 1 F/200-140 B 160 (P) | 155      |              |               |
|                     | WST 1 F/250-140 B 160 (P) | 180      | 0,700        | 313 312       |



# S 1 CABLE CARRIERS AND ACCESSORIES – Steel type –



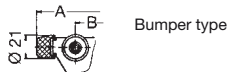
acid  
proof

Stain-  
less

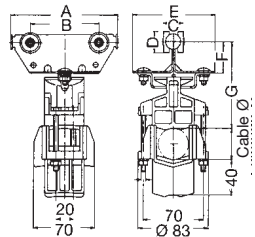


## Engineering Data

| Type                | WST 1 R                                                                                                                                                                              | WST 1 R-E                                                                                         | WST 1 RK-E                                                 |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Wheels              | ball bearings sealed against dust and splash<br>water hardened, galvanized<br>Temperature resistance: Lub. grease of<br>wheels: -30° C to +125° C<br>Travelling speed: ca. 80 m/min. | sealed ball bearing<br>stainless steel, V 4 A<br>-30° C to +150° C<br><br>ca. 80 m/min.           | Polyamid rollers on<br>bushed bearing<br><br>ca. 50 m/min. |
| Material            | Carrier body: steel, galvanized<br>Support saddle: Polyamid<br>Bumper: Neoprene<br>Hardware: galvanized<br>Temperature resistance: -30° C to +100° C                                 | V 4 A, stainless steel<br>Polypropylene<br>Neoprene<br>V 4 A, stainless steel<br>-10° C to +80° C |                                                            |
| Max. cable load     | max. 22 kg per carrier                                                                                                                                                               | max. 12 kg per carrier                                                                            | max. 8 kg per carrier                                      |
| Depth of cable loop | in curves max. 0,3 x track radius;<br>consider tension relief                                                                                                                        |                                                                                                   | not in curves                                              |
| for corrosive sites | use system S 1-E or K 1                                                                                                                                                              |                                                                                                   |                                                            |

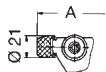


Bumper type

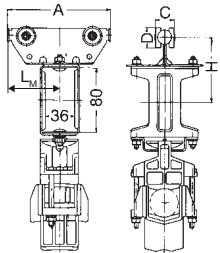


## Cable Carriers for round cables and hoses

| Type                       | Cable-<br>Ø   | A   | B  | C  | D  | E  | F  | G  | Weight<br>kg | Order-<br>No. | Type                         | Order-<br>No. | Type             | Order-<br>No. |
|----------------------------|---------------|-----|----|----|----|----|----|----|--------------|---------------|------------------------------|---------------|------------------|---------------|
| WST 1 R/ 85 <sup>(1)</sup> |               | 85  |    |    |    |    |    |    | 0,430        | 312 491       | WST 1 R/ 85-E <sup>(1)</sup> | 312 523       | WST 1 R/ 85 K-E  | 313 243       |
| WST 1 R/ 85 P              | 5 mm to 38 mm | 110 | 43 | 24 | 25 | 85 | 36 | 99 | 0,460        | 312 492       | WST 1 R/ 85 P-E              | 312 524       | WST 1 R/ 85 KP-E | 313 244       |
| WST 1 R/125 <sup>(1)</sup> |               | 125 |    |    |    |    |    |    | 0,540        | 312 493       | WST 1 R/125-E <sup>(1)</sup> | 312 525       | WST 1 R/125 K-E  | 313 245       |
| WST 1 R/125 P              |               | 150 | 80 | 24 | 25 | 97 | 36 | 99 | 0,570        | 312 494       | WST 1 R/125 P-E              | 312 526       | WST 1 R/125 KP-E | 313 246       |

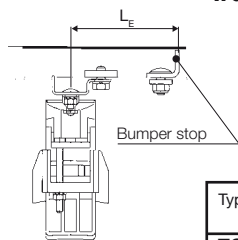


## Lead Carriers for round cables and hoses



| Type                       | for<br>Carrier type | L <sub>m</sub> | A   | C  | D  | H  | Weight<br>kg | Order-<br>No. | Type                         | Order-<br>No. | Type             | Order-<br>No. |
|----------------------------|---------------------|----------------|-----|----|----|----|--------------|---------------|------------------------------|---------------|------------------|---------------|
| MST 1 R/ 85 <sup>(1)</sup> | WST 1 R/ 85         | 43             | 85  |    |    |    | 0,780        | 312 495       | MST 1 R/ 85-E <sup>(1)</sup> | 312 527       | MST 1 R/ 85 K-E  | 313 247       |
| MST 1 R/ 85 P              | WST 1 R/ 85 P       | 55             | 110 | 24 | 25 | 80 | 0,810        | 312 496       | MST 1 R/ 85 P-E              | 312 528       | MST 1 R/ 85 KP-E | 313 248       |
| MST 1 R/125 <sup>(1)</sup> | WST 1 R/125         | 63             | 125 |    |    |    | 0,890        | 312 497       | MST 1 R/125-E <sup>(1)</sup> | 312 529       | MST 1 R/125 K-E  | 313 249       |
| MST 1 R/125 P              | WST 1 R/125 P       | 75             | 150 |    |    |    | 0,920        | 312 498       | MST 1 R/125 P-E              | 312 530       | MST 1 R/125 KP-E | 313 250       |

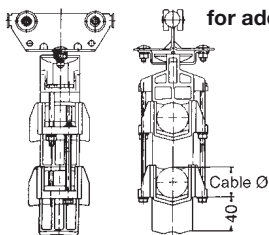
## Track Clamp for round cables and hoses



| Type      | for<br>Carrier type | L <sub>E</sub><br>mm | Weight<br>kg | Order-<br>No. | Type      | Order-<br>No. |
|-----------|---------------------|----------------------|--------------|---------------|-----------|---------------|
| EST 1-2 R | WST 1 R (all types) | 100                  | 0,340        | 313 321       | EST 1 R-E | 312 531       |

Bumper stop PS 1, PS 1-1, PS 1 G, PS 1-E to be ordered separately.

## Support Saddle for round cables and hoses for additional tiers



| Type | for<br>Carrier type  | Weight<br>kg | Order-<br>No. | Type  | Order-<br>No. |
|------|----------------------|--------------|---------------|-------|---------------|
| LAR  | WST 1 R (alle Typen) | 0,110        | 312 500       | LAR-E | 312 532       |

<sup>(1)</sup> without Bumper



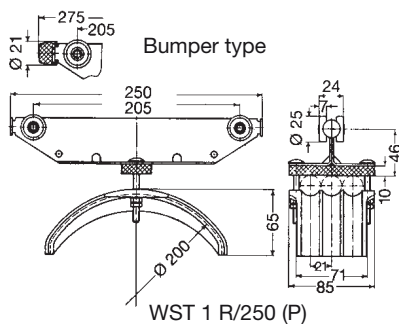
# S 1 CABLE CARRIERS AND ACCESSORIES

- Steel type -



## Engineering Data

| Type                | WST 1 R/250, WST 1 R/250 P                                                                                                                                                       |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheels              | ball bearings sealed against dust and splash water<br>hardened, galvanized<br>Temperature resistance Lub. grease of wheels: -30° C to +125° C<br>Travelling speed: ca. 80 m/min. |
| Material            | Carrier body: steel, galvanized<br>Cable-loop: Polyamid<br>Support saddle: Polyamid<br>Hardware: galvanized<br>Temperature resistance: - 30° C to +100° C                        |
| Max. cable load     | max. 22 kg per carrier WST 1 R/250 (P)                                                                                                                                           |
| for corrosive sites | use system S 1-E or K 1                                                                                                                                                          |



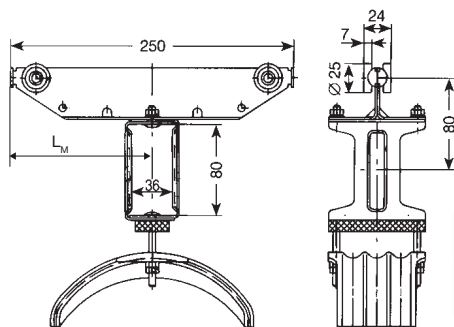
## Cable Carriers for round cables and hoses

| Type                              | max. cable-Ø mm | Weight kg | Order-No. |
|-----------------------------------|-----------------|-----------|-----------|
| <b>WST 1 R/250 <sup>(1)</sup></b> | 3 x Ø 20        | 0,660     | 312 060   |
| <b>WST 1 R/250 P</b>              |                 | 0,690     | 312 070   |



## Lead Carriers for round cables and hoses

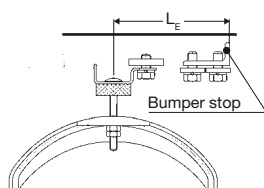
Support saddle same as for cable carriers



| Type                              | for Carrier type     | L <sub>M</sub> | A mm | Weight kg | Order-No. |
|-----------------------------------|----------------------|----------------|------|-----------|-----------|
| <b>MST 1 R/250 <sup>(1)</sup></b> | <b>WST 1 R/250</b>   | 125            | 250  | 1,000     | 312 140   |
| <b>MST 1 R/250 P</b>              | <b>WST 1 R/250 P</b> | 125            | 275  | 1,030     | 312 150   |

## Track Clamp for round cables and hoses

Support saddle same as for cable carriers



Bumper stop PS 1, PS 1-1, PS 1 G to be ordered separately.

| Type              | for Carrier type     | L <sub>E</sub> mm | Weight kg | Order-No. |
|-------------------|----------------------|-------------------|-----------|-----------|
| <b>ES 1 R/250</b> | <b>WST 1 R/250</b>   | 165               | 0,298     | 313 320   |
|                   | <b>WST 1 R/250 P</b> | 178               |           |           |



# S 1 CABLE CARRIERS AND ACCESSORIES

- Steel type -



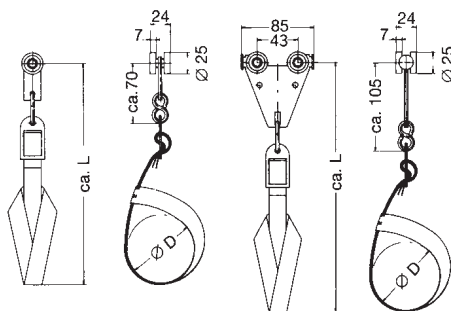
## Engineering Data

| Type                | WR 1-Sch, WST 1-Sch                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheels              | ball bearings sealed against dust and splash water<br>hardened, galvanized<br>Temperature resistance Lub. grease of wheels: -30° C to +125° C<br>Travelling speed: ca. 80 m/min. |
| Material            | Carrier body: steel, galvanized<br>S-Hook: steel, galvanized<br>Cable-loop: Polyamid<br>Hardware: galvanized<br>Temperature resistance: - 30° C to +100                          |
| Max. cable load     | max. 10 kg per carrier WR 1-Sch<br>max. 20 kg per carrier WST 1-Sch                                                                                                              |
| for corrosive sites | use system S 1-E or K 1                                                                                                                                                          |

## Cable Carriers for round cables and hoses

WR 1-Sch

WST 1-Sch



| Type          | Ø D mm | L mm | Weight kg | Order-No. |
|---------------|--------|------|-----------|-----------|
| WR 1-Sch/ 80  | 80     | 210  | 0,100     | 312 900   |
| WR 1-Sch/160  | 160    | 290  | 0,110     | 312 901   |
| WST 1-Sch/ 80 | 80     | 240  | 0,270     | 312 875   |
| WST 1-Sch/160 | 160    | 320  | 0,280     | 312 876   |

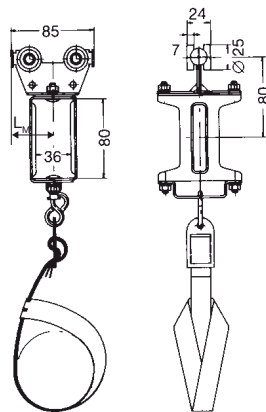
### Installation information:

1. prepare ribbon ends as shown.
2. pull all ends thru flap.
3. form a loop.
4. attach flap to S-hook!

1.

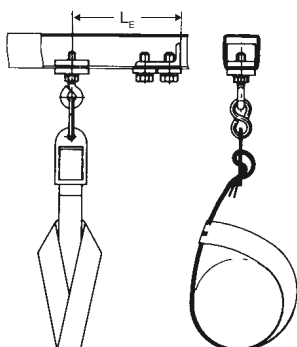


2.



## Lead Carriers for round cables and hoses

| Type          | for Carrier type | Lm | Weight kg | Order-No. |
|---------------|------------------|----|-----------|-----------|
| MST 1-Sch/ 80 | WR 1-Sch/ 80     | 43 | 0,680     | 312 877   |
|               | WST 1-Sch/ 80    |    |           |           |
| MST 1-Sch/160 | WR 1-Sch/160     | 43 | 0,690     | 312 878   |
|               | WST 1-Sch/160    |    |           |           |



## Track Clamps for round cables and hoses

| Type            | for Carrier type | L_E | Weight kg | Order-No. |
|-----------------|------------------|-----|-----------|-----------|
| EST 1-2-Sch/ 80 | WR 1-Sch/ 80     | 110 | 0,140     | 312 879   |
|                 | WST 1-Sch/ 80    |     |           |           |
| EST 1-2-Sch/160 | WR 1-Sch/160     | 110 | 0,150     | 312 880   |
|                 | WST 1-Sch/160    |     |           |           |

Bumper stop PS 1, PS 1-1 or PS 1 G to be ordered separately.



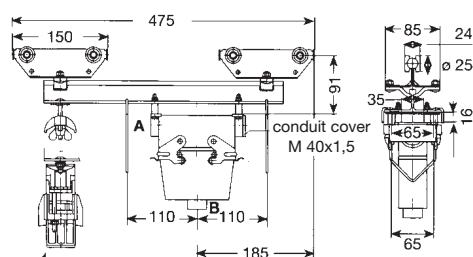
# S 1 CONTROL CARRIER AND ACCESSORIES



acid  
proof

Stain-  
less

## Control Carriers with multipole plug-in



ST-ST 1 R saddle for round cable

| Type <sup>(1)</sup>                    | plug-in-device<br>DIN 43652 | Weight<br>kg | Order-<br>No. |
|----------------------------------------|-----------------------------|--------------|---------------|
| ST-ST 1/16 M                           | 16pole                      | 2,100        | 313 371       |
| ST-ST 1/24 M                           | 24pole                      | 2,300        | 313 370       |
| Design for round cable clamp ST-ST 1 R |                             |              |               |
| ST-ST 1 R/16 M                         | 16pole                      | 2,200        | 313 373       |
| ST-ST 1 R/24 M                         | 24pole                      | 2,400        | 313 372       |

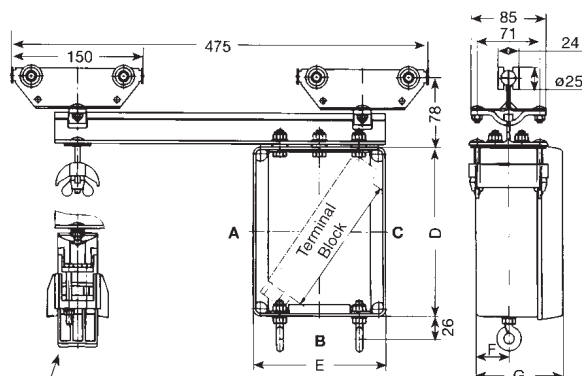
### Design:

Carrier body: steel, galvanized      Support bar: aluminium  
Wheels: steel ball bearings      Plug: cast iron

Cable glands for 16-poles      Cable glands for 24-poles  
A-Seite: M 40 x 1,5      A-Seite: M 40 x 1,5  
B-Seite: M 32 x 1,5      B-Seite: M 40 x 1,5

Max. cable load: 25 kg  
Temperature resistance: - 30° C to +100° C

## Control Carriers without Brake



ST-ST 1 R saddle for round cable

| Type <sup>(1)</sup>                    | D   | E   | F  | G   | Weight kg | Order-No. | Type <sup>(1)</sup> | Order-No. |
|----------------------------------------|-----|-----|----|-----|-----------|-----------|---------------------|-----------|
| ST-ST 1/A 1                            | 190 | 150 | 38 | 100 | 2,900     | 312 695   | ST-ST 1-E           | 316 332   |
| ST-ST 1/A 2                            | 280 | 200 | 62 | 140 | 4,300     | 312 694   | -                   | -         |
| Design for round cable clamp ST-ST 1 R |     |     |    |     |           |           |                     |           |
| ST-ST 1 R/A 1                          | 190 | 150 | 38 | 100 | 3,000     | 312 817   | ST-ST 1 R-E         | 312 819   |
| ST-ST 1 R/A 2                          | 280 | 200 | 62 | 140 | 4,400     | 312 818   | -                   | -         |

### Design:

Carrier body: steel, galvanized      Support bar: aluminium  
Wheels: steel ball bearings      Plug: PVC

Max. load: 25 kgs  
Service temperature: -30° C upto +100° C

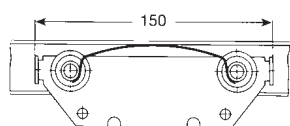
**Attention:** The connection box must be earthed with a protective earth conductor terminal Type EK 2.5 N PA!

| ST-ST 1/A 1<br>ST-ST 1 R/A 1<br>ST-ST 1-E & ST-ST 1 R-E |                          |                          | ST-ST 1/A 2<br>ST-ST 1 R/A 2 |                          |                          |
|---------------------------------------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|
| Cable glands                                            | max.<br>number<br>A-Side | max.<br>number<br>B-Side | Cable glands                 | max.<br>number<br>A-Side | max.<br>number<br>B-Side |
| M 20 x 1,5                                              | 6                        | 2                        | M 20 x 1,5                   | 12                       | 6                        |
| M 25 x 1,5                                              | 5                        | 1                        | M 25 x 1,5                   | 10                       | 6                        |
| M 32 x 1,5                                              | 3                        | 1                        | M 32 x 1,5                   | 8                        | 4                        |
| M 40 x 1,5                                              | 2                        | 1                        | M 40 x 1,5                   | 4                        | 1                        |
| M 50 x 1,5                                              | 2                        | -                        | M 50 x 1,5                   | 3                        | 1                        |
| M 63 x 1,5                                              | 2                        | -                        | M 63 x 1,5                   | 3                        | 1                        |

Max. length of Terminal Block A 1 = 130mm  
A 2 = 220 mm

## Brake spring for Control Carrier ST - ST 1

The braking device can be installed as an option.



| Type | Material        | Weight kg | Order-No. |
|------|-----------------|-----------|-----------|
| BF 1 | stainless steel | 0,007     | 310 860   |

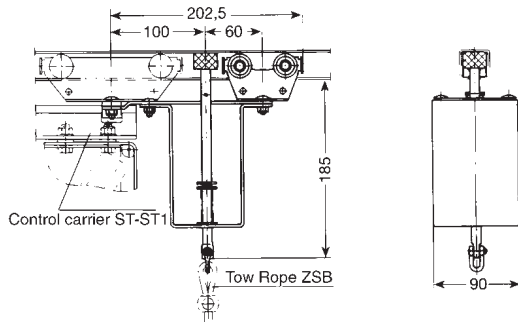


## S 1 ACCESSORIES FOR CONTROL CARRIERS

acid  
proof

Stain-  
less

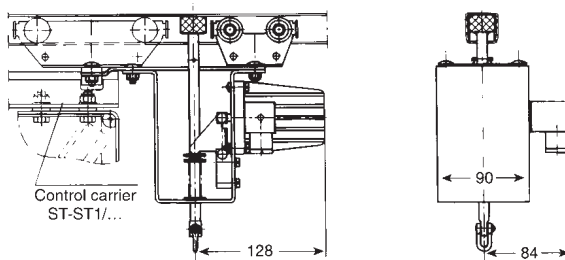
### Brake for Control Carrier



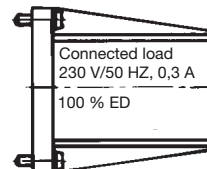
| Type        | Weight<br>kg | Order-No. |
|-------------|--------------|-----------|
| <b>BS 1</b> | 1,740        | 312 698   |

Design:  
Carrier: Steel, galvanized  
Wheels: Steel ball bearings

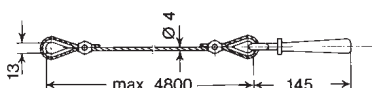
### Brake for Control Carrier with AC magnet (WM)



| Type           | Weight<br>kg | Order-No. |
|----------------|--------------|-----------|
| <b>BS 1-WM</b> | 2,900        | 312 699   |



### Tow Rope and Grip for Brake BS 1

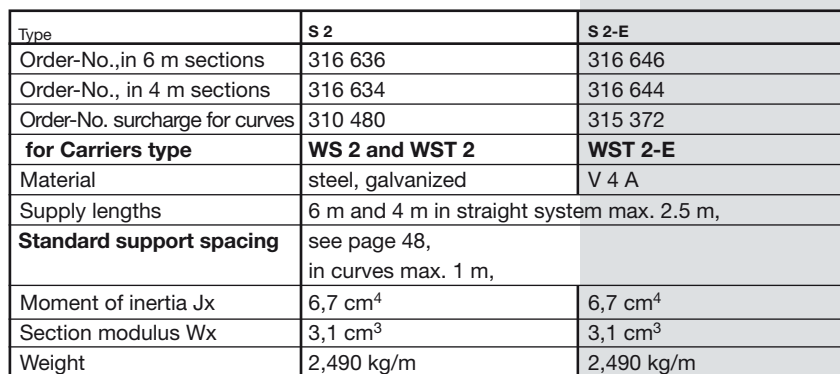


| Type       | Standard length-<br>mm | Weight<br>kg | Order-No. |
|------------|------------------------|--------------|-----------|
| <b>ZSB</b> | 5000                   | 0,250        | 310 850   |

Scope of delivery: hand grip, rope, rope thimble and clamp.

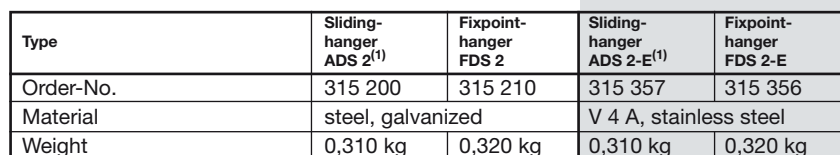


**acid  
proof**

**Stain-  
less**

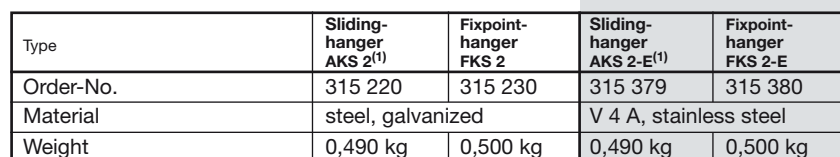
Horizontal Curves are ready available. Consult factory for specials.

## Hanger underhung

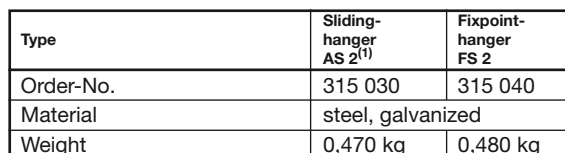


| Typ       | Sliding-hanger<br>ABS 2 <sup>(1)</sup> | Fixpoint-hanger<br>FBS 2 |
|-----------|----------------------------------------|--------------------------|
| Order-No. | 315 140                                | 315 150                  |
| Material  | steel, galvanized                      |                          |
| Weight    | 0,370 kg                               | 0,380 kg                 |

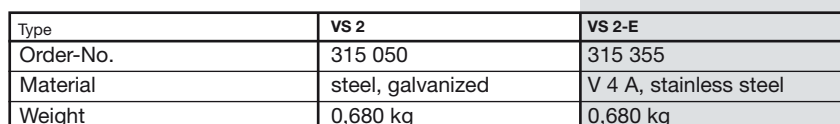
## Hanger underhung for HK•support



## Hanger lateral



**Joint Clamp** upto 100 m system length



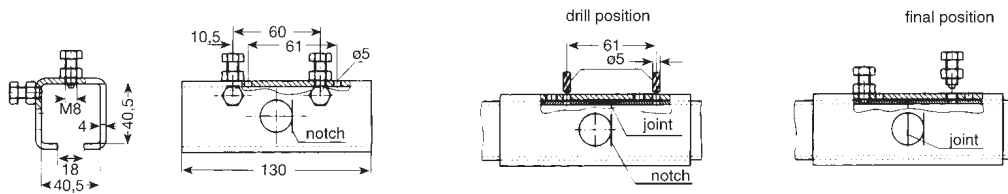


## S 2 ACCESSORIES

acid  
proof

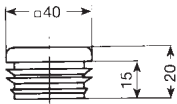
Stain-  
less

Joint Clamp, lock type (Patent pending) from 100 m system lenght



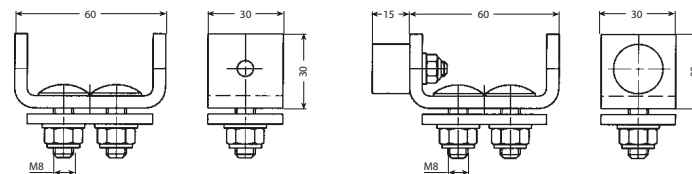
|           |                   |
|-----------|-------------------|
| Type      | VS 2-F            |
| Order-No. | 316 522           |
| Material  | steel, galvanized |
| Weight    | 0,680 kg          |

End Cap



|           |  |              |
|-----------|--|--------------|
| Type      |  | K 40         |
| Order-No. |  | 316 449      |
| Material  |  | polyethylene |
| Weight    |  | 0,009 kg     |

Bumper stop

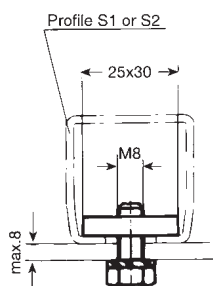


PS 2-1 (E)

PS 2-1 G

|           |                   |                   |                        |
|-----------|-------------------|-------------------|------------------------|
| Type      | PS 2-1            | PS 2-1 G          | PS 2-1 E               |
| Order-No. | 317 000           | 317 001           | 317 002                |
| Material  | steel, galvanized | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,220 kg          | 0,250 kg          | 0,220 kg               |

Flat nut w/bolt and washer



|           |                 |
|-----------|-----------------|
| Type      | M 8 x 20        |
| Order-No. | 312 600         |
| Material  | Stahl, verzinkt |
| Weight    | 0,044 kg        |

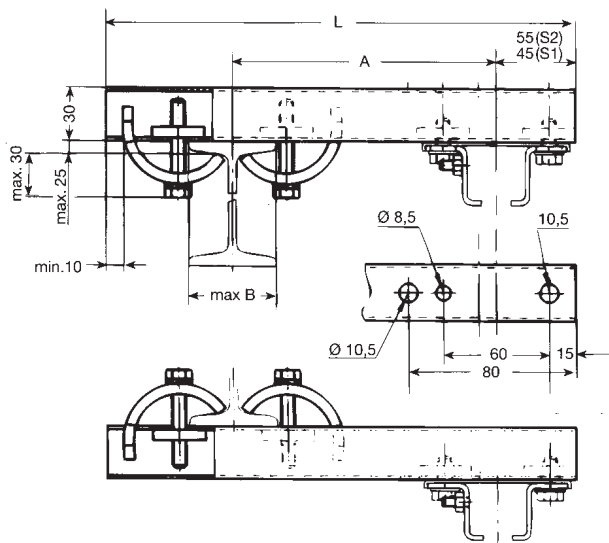


## S 2 ACCESSORIES

acid  
proof

Stain-  
less

### Standard Brackets



Choose dim. A per local requirements and make sure that hoist wheels have enough clearance.

Select next larger size bracket when your I-Beam dim. B is more than 210 mm and refer to page 23 for heavy duty brackets.

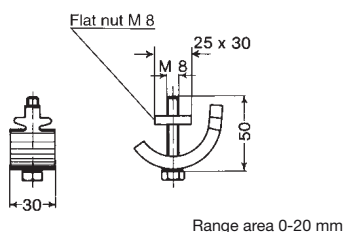
| Type   | Material            | Weight kg | A (adjustable) mm | L mm | max B mm           | Order-No. | Type     | Mat.                      | Order-No. |
|--------|---------------------|-----------|-------------------|------|--------------------|-----------|----------|---------------------------|-----------|
| HK 200 | steel<br>galvanized | 0,980     | 200               | 400  | 210 <sup>(1)</sup> | 310 220   | HK 200-E | stainl.<br>steel<br>V 4 A | 312 510   |
| HK 300 |                     | 1,130     | 300               | 500  | 210 <sup>(1)</sup> | 310 230   | HK 300-E |                           | 312 511   |
| HK 400 |                     | 1,290     | 400               | 600  | 210 <sup>(1)</sup> | 310 240   | HK 400-E |                           | 312 512   |
| HK 500 |                     | 1,430     | 500               | 700  | 210 <sup>(1)</sup> | 310 250   | HK 500-E |                           | 312 513   |

Scope of supply: 1 pair of claws and rail short length S1.  
Hangers AKS 2 and FKS 2 to be ordered separately.

### Bracket Bars for HK

| Type    | Material            | Weight kg | L mm | Order-No. | Type     | Mat.                      | Order-No. |
|---------|---------------------|-----------|------|-----------|----------|---------------------------|-----------|
| S 1-400 | steel<br>galvanized | 0,620     | 400  | 310 600   | S 1E-400 | stainl.<br>steel<br>V 4 A | 312 515   |
| S 1-500 |                     | 0,780     | 500  | 310 610   | S 1E-500 |                           | 312 516   |
| S 1-600 |                     | 0,930     | 600  | 310 620   | S 1E-600 |                           | 312 517   |
| S 1-700 |                     | 1,090     | 700  | 310 630   | S 1E-700 |                           | 312 518   |

### Claws for HK

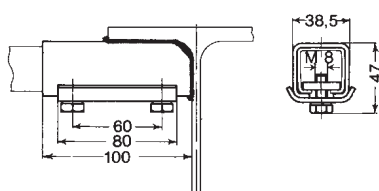


| Type      | SP 0-20           | SP 0-20-E              |
|-----------|-------------------|------------------------|
| Order-No. | 310 390           | 312 514                |
| Material  | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,200 kg          | 0,200 kg               |

Flat nut M 8 separately available.  
Order-No. 310 955

Flat nut M 8 E stainless  
separately available.  
Order-No. 312 545

### Support Attachment for HK



| Type      | AH 1     |
|-----------|----------|
| Order-No. | 310 400  |
| Material  | steel    |
| Weight    | 0,460 kg |

Bracket bar sections and hangers to be ordered separately..



## S 2 ACCESSORIES

acid  
proof

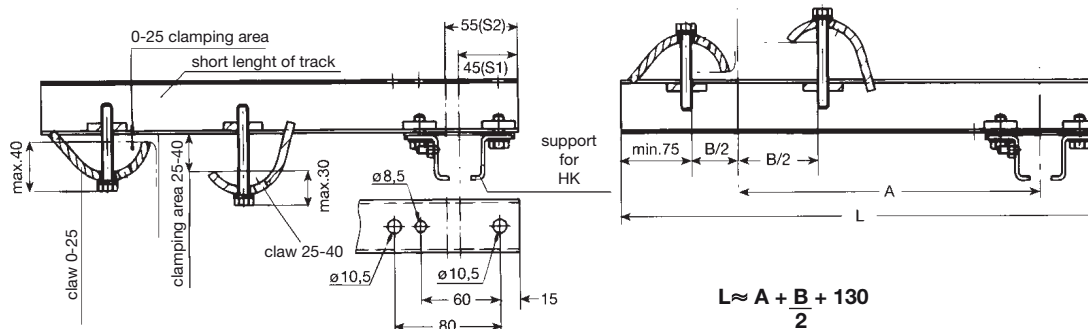
Stain-  
less

### Bracket Bars for HK heavy duty

The track sections are provided with drillings to fix the support hangers at the bottom flange of the track profile.

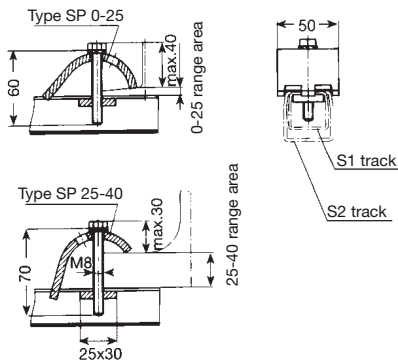
| Type     | Material           | Weight<br>kg | Dim. L<br>mm | Order-No. | Type      | Mat.                      | Order-No. |
|----------|--------------------|--------------|--------------|-----------|-----------|---------------------------|-----------|
| S 2- 400 | steel<br>galvanize | 0,996        | 400          | 315 402   | S 2E- 400 | stainl.<br>steel<br>V 4 A | 316 513   |
| S 2- 500 |                    | 1,245        | 500          | 315 403   | S 2E- 500 |                           | 316 514   |
| S 2- 600 |                    | 1,494        | 600          | 315 404   | S 2E- 600 |                           | 316 515   |
| S 2- 700 |                    | 1,743        | 700          | 315 405   | S 2E- 700 |                           | 316 516   |
| S 2- 800 |                    | 1,992        | 800          | 315 406   | S 2E- 800 |                           | 316 517   |
| S 2- 900 |                    | 2,241        | 900          | 315 407   | S 2E- 900 |                           | 316 518   |
| S 2-1000 |                    | 2,490        | 1000         | 315 408   | S 2E-1000 |                           | 316 519   |
| S 2-1100 |                    | 2,739        | 1100         | 315 409   | S 2E-1100 |                           | 316 520   |
| S 2-1200 |                    | 2,988        | 1200         | 315 410   | S 2E-1200 |                           | 316 521   |

### General Assembly of Heavy Duty Bracket



Dimension A is based on the width of the current consumer (e.g. the trolley). Please consider the running wheel diameter (flange) of the chassis in overhead monorails.

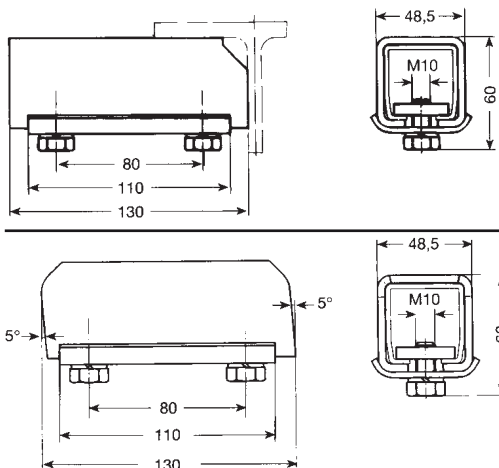
### Claws for HK heavy duty



| Type      | SP 0-25           | SP 0-25-E              |
|-----------|-------------------|------------------------|
| Order-No. | 312 643           | 316 690                |
| Material  | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,286 kg          | 0,286 kg               |

| Type      | SP 25-40          | SP 25-40-E             |
|-----------|-------------------|------------------------|
| Order-No. | 312 644           | 316 695                |
| Material  | steel, galvanized | V 4 A, stainless steel |
| Weight    | 0,287 kg          | 0,287 kg               |

### Support Attachment for HK heavy duty



| Type      | AH 2     |
|-----------|----------|
| Order-No. | 310 989  |
| Material  | steel    |
| Weight    | 0,940 kg |

| Type      | AH 2-2   |
|-----------|----------|
| Order-No. | 312 648  |
| Material  | steel    |
| Weight    | 0,854 kg |



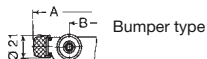
# S2 CABLE CARRIERS AND ACCESSORIES – Steel type –



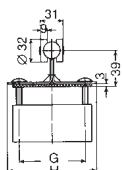
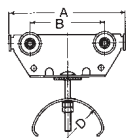
hex. nut version



quick-set nut version



Bumper type



## Engineering Data

| Type                | WST 2 F (für Flachleitungen)                                                                                                                                                                                                    |                                                      |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Wheels              | hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water – 2 metal sealings<br>Temperature resistance Lub. Grease of wheels –30° C to +125° C<br>Travelling speed ca. 100 m/min. | Polyamid rollers on bushed bearings<br>ca. 60 m/min. |
| Material            | Carrier body: steel galvanized<br>Support saddle galvanized steel<br>Bumper: Neoprene<br>Hardware galvanized<br>Temperatur resistance: – 30° C to +100° C                                                                       | with patented nut support saddle<br>Polyamid         |
| Max. cable load     | max. 28 kg per carrier                                                                                                                                                                                                          | max. 12 kg per carrier                               |
| Depth of cable loop | not in curves                                                                                                                                                                                                                   | not in curves                                        |
| for corrosive sites | use system S 2-E                                                                                                                                                                                                                |                                                      |

## Cable carriers for flatform cables (3)

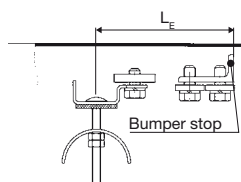
| Type                           | max.<br>thickn. of<br>individual<br>cable mm | max.<br>clamping<br>capacity<br>in mm height<br>x width | A   | B   | Ø D   | G  | H       | Weight<br>kg | with<br>patented<br>nut Order-<br>No. <sup>(2)</sup> | Order-<br>No.                   | Type                            | with<br>patented<br>nut Order-<br>No. <sup>(2)</sup> | Order-<br>No. |
|--------------------------------|----------------------------------------------|---------------------------------------------------------|-----|-----|-------|----|---------|--------------|------------------------------------------------------|---------------------------------|---------------------------------|------------------------------------------------------|---------------|
| WST 2 F/ 85 <sup>(1)</sup>     | 8                                            | 17 x 65                                                 | 85  | 43  | 50    | 71 | 85      | 0,460        | 316 493                                              | 316 170                         | WST 2 F/ 85 K <sup>(1)</sup>    | 317 008                                              | 317 018       |
| WST 2 F/ 85 P                  |                                              | 29 x 65                                                 | 110 |     |       |    |         | 0,470        | 316 494                                              | 316 180                         | WST 2 F/ 85 KP                  | 317 009                                              | 317 019       |
| WST 2 F/125-50 <sup>(1)</sup>  |                                              | 37 x 65                                                 | 125 | 80  |       |    |         | 0,560        | 316 495                                              | 315 381                         | WST 2 F/125-50 K <sup>(1)</sup> | 317 010                                              | 317 020       |
| WST 2 F/125-50 P               |                                              | 50 x 65                                                 | 150 |     |       |    |         | 0,570        | 316 496                                              | 315 382                         | WST 2 F/125-50 KP               | 317 011                                              | 317 021       |
| WST 2 F/125 <sup>(1)</sup>     | 10                                           | 22 x 65                                                 | 125 | 80  | 0,630 |    | 316 497 | 316 190      | WST 2 F/125 K <sup>(1)</sup>                         | 317 012                         | 317 022                         |                                                      |               |
| WST 2 F/125 P                  |                                              | 34 x 65                                                 | 150 |     | 0,640 |    | 316 498 | 316 200      | WST 2 F/125 KP                                       | 317 013                         | 317 023                         |                                                      |               |
| WST 2 F/150-50 <sup>(1)</sup>  | 8                                            | 50 x 65                                                 | 150 | 50  | 0,590 |    | 316 499 | 315 383      | WST 2 F/150-50 K <sup>(1)</sup>                      | 317 014                         | 317 024                         |                                                      |               |
| WST 2 F/150-50 P               |                                              | 62 x 65                                                 | 175 |     | 0,600 |    | 316 500 | 315 384      | WST 2 F/150-50 KP                                    | 317 015                         | 317 025                         |                                                      |               |
| WST 2 F/150-80 <sup>(1)</sup>  | 10                                           | 35 x 65                                                 | 150 |     | 80    |    | 0,660   | 316 501      | 315 385                                              | WST 2 F/150-80 K <sup>(1)</sup> | 317 016                         | 317 026                                              |               |
| WST 2 F/150-80 P               |                                              | 47 x 65                                                 | 175 |     |       |    | 0,670   | 316 502      | 315 386                                              | WST 2 F/150-80 KP               | 317 017                         | 317 027                                              |               |
| WST 2 F/150 <sup>(1)</sup>     | 12                                           | 25 x 65                                                 | 150 | 100 |       |    | 0,700   |              | 316 210                                              | WST 2 F/150 K <sup>(1)</sup>    |                                 | 317 028                                              |               |
| WST 2 F/150 P                  |                                              | 37 x 65                                                 | 175 |     |       |    | 0,710   |              | 316 220                                              | WST 2 F/150 KP                  |                                 | 317 029                                              |               |
| WST 2 F/200-100 <sup>(1)</sup> |                                              | 50 x 65                                                 | 200 |     | 0,800 |    |         | 316 576      | WST 2 F/200-100 K <sup>(1)</sup>                     |                                 | 317 030                         |                                                      |               |
| WST 2 F/200-100 P              |                                              | 62 x 65                                                 | 225 |     | 0,810 |    |         | 316 577      | WST 2 F/200-100 KP                                   |                                 | 317 031                         |                                                      |               |

## Lead Carriers for flatform cables

| Type                | for Carrier type  | Lm  | A mm | Weight kg | with patented Order-No.(2) | Order-No. | Type                  | with patented Order-No. (2) | Order-No. |
|---------------------|-------------------|-----|------|-----------|----------------------------|-----------|-----------------------|-----------------------------|-----------|
| MST 2 F/ 85 (1)     | WST 2 F/ 85       | 43  | 85   | 0,830     | 316 503                    | 316 230   | MST 2 F/ 85 K (1)     | 317 032                     | 317 042   |
| MST 2 F/ 85 P       | WST 2 F/ 85 P     | 55  | 110  | 0,840     | 316 504                    | 316 240   | MST 2 F/ 85 KP        | 317 033                     | 317 043   |
| MST 2 F/125-50 (1)  | WST 2 F/125-50    | 63  | 125  | 0,940     | 316 505                    | 315 389   | MST 2 F/125-50 K (1)  | 317 034                     | 317 044   |
| MST 2 F/125-50 P    | WST 2 F/125-50 P  | 75  | 150  | 0,950     | 316 506                    | 315 390   | MST 2 F/125-50 KP     | 317 035                     | 317 045   |
| MST 2 F/125 (1)     | WST 2 F/125       | 63  | 125  | 1,010     | 316 507                    | 316 250   | MST 2 F/125 K (1)     | 317 036                     | 317 046   |
| MST 2 F/125 P       | WST 2 F/125 P     | 75  | 150  | 1,020     | 316 508                    | 316 260   | MST 2 F/125 KP        | 317 037                     | 317 047   |
| MST 2 F/150-50 (1)  | WST 2 F/150-50    | 75  | 150  | 0,960     | 316 509                    | 315 391   | MST 2 F/150-50 K (1)  | 317 038                     | 317 048   |
| MST 2 F/150-50 P    | WST 2 F/150-50 P  | 88  | 175  | 0,970     | 316 510                    | 315 392   | MST 2 F/150-50 KP     | 317 039                     | 317 049   |
| MST 2 F/150-80 (1)  | WST 2 F/150-80    | 75  | 150  | 1,030     | 316 511                    | 315 393   | MST 2 F/150-80 K (1)  | 317 040                     | 317 050   |
| MST 2 F/150-80 P    | WST 2 F/150-80 P  | 88  | 175  | 1,040     | 316 512                    | 315 394   | MST 2 F/150-80 KP     | 317 041                     | 317 051   |
| MST 2 F/150 (1)     | WST 2 F/150       | 75  | 150  | 1,070     |                            | 316 270   | MST 2 F/150 K (1)     |                             | 317 052   |
| MST 2 F/150 P       | WST 2 F/150 P     | 88  | 175  | 1,080     |                            | 316 280   | MST 2 F/150 KP        |                             | 317 053   |
| MST 2 F/200-100 (1) | WST 2 F/200-100   | 100 | 200  | 1,170     |                            | 316 578   | MST 2 F/200-100 K (1) |                             | 317 054   |
| MST 2 F/200-100 P   | WST 2 F/200-100 P | 113 | 225  | 1,180     |                            | 316 579   | MST 2 F/200-100 KP    |                             | 317 055   |

## Track clamps for flatform cables

| Type            | for Carrier type        | LE mm | Weight kg | with patented Order-No.(2) | Best.-Nr. |
|-----------------|-------------------------|-------|-----------|----------------------------|-----------|
| EST 1-2 F/ 85   | WST 2 F/ 85 (K) (P)     | 150   | 0,290     | 313 304                    | 313 315   |
|                 | WST 2 F/125-50 (K) (P)  |       |           |                            |           |
|                 | WST 2 F/150-50 (K) (P)  |       |           |                            |           |
| EST 1-2 F/125   | WST 2 F/125 (K) (P)     | 150   | 0,370     | 313 308                    | 313 316   |
|                 | WST 2 F/150-80 (K) (P)  |       |           |                            |           |
| EST 1-2 F/150   | WST 2 F/150 (K) (P)     | 150   | 0,410     |                            | 313 317   |
| EST 1-2 F/100-2 | WST 2 F/200-100 (K) (P) | 190   | 0,410     |                            | 313 318   |



Bumper stop PS 2-1 (PS 2-1 G, PS 2-1-E) to be ordered separately.

(1) w/o Bumper

(2) with patented nut use suffix PM e. g. WST 2/F 85-PM.

(3) cable carriers cannot be used if straw relief is required

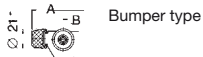


# S2 CABLE CARRIERS AND ACCESSORIES – Steel type–

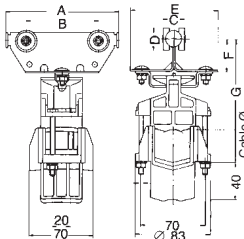


## Engineering Data

| Type                | WST 2 R                                                                                                                                                                                                 |                                                      |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Wheels              | hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water Temperature resistance Lub. Grease of wheels –30° C to +125° C, Travelling speed ca. 100 m/min. | Kunststofflaufrollen mit Gleitlager<br>ca. 60 m/min. |
| Material            | Carrier body: steel galvanized<br>Support saddle: Polyamid<br>Bumper: Neoprene<br>Hardware galvanized<br>Temperatur resistance: – 30° C to +100° C                                                      |                                                      |
| Max. cable load     | max. 22 kg per carrier                                                                                                                                                                                  | max. 12 kg je Leitungswagen                          |
| Depth of cable loop | not in curves                                                                                                                                                                                           | not in curves                                        |
| for corrosive sites | use system S 2-E                                                                                                                                                                                        |                                                      |



Bumper type

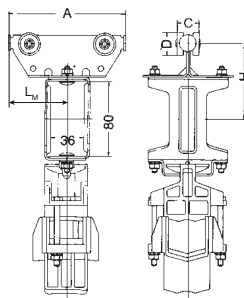


## Cable carriers for round cable and hoses not suitable for strain relief

| Type                       | Cable-<br>Ø          | A   | B  | C  | D  | E  | F  | G  | Weight<br>kg | Order-<br>No. | Type                         | Order-<br>No. |
|----------------------------|----------------------|-----|----|----|----|----|----|----|--------------|---------------|------------------------------|---------------|
|                            |                      | mm  |    |    |    |    |    |    |              |               |                              |               |
| WST 2 R/ 85 <sup>(1)</sup> | 5 mm<br>bis<br>38 mm | 85  | 43 | 31 | 32 | 85 | 36 | 99 | 0,530        | 316 416       | WST 2 R/ 85 K <sup>(1)</sup> | 317 056       |
| WST 2 R/ 85 P              |                      | 110 |    |    |    |    |    |    | 0,550        | 316 417       | WST 2 R/ 85 KP               | 317 057       |
| WST 2 R/125 <sup>(1)</sup> |                      | 125 | 80 | 31 | 32 | 97 | 36 | 99 | 0,630        | 316 418       | WST 2 R/125 K <sup>(1)</sup> | 317 058       |
| WST 2 R/125 P              |                      | 150 |    |    |    |    |    |    | 0,650        | 316 419       | WST 2 R/125 KP               | 317 059       |

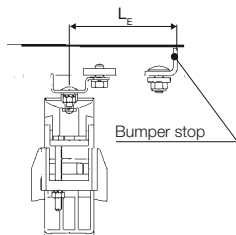
## Lead carriers for round cables and hoses

Bumper type



| Type                       | for<br>Carrier type | A   | C  | D  | H  | Weight<br>kg | Order-<br>No. | Type                          | Order-<br>No. |
|----------------------------|---------------------|-----|----|----|----|--------------|---------------|-------------------------------|---------------|
|                            |                     | mm  |    |    |    |              |               |                               |               |
| MST 2 R/ 85 <sup>(1)</sup> | WST 2 R/ 85         | 85  | 31 | 32 | 80 | 0,890        | 316 420       | MST 2 R/85 K <sup>(1)</sup>   | 317 060       |
| MST 2 R/ 85 P              | WST 2 R/ 85 P       | 110 |    |    |    | 0,910        | 316 421       | MST 2 R/85 KP <sup>(1)</sup>  | 317 061       |
| MST 2 R/125 <sup>(1)</sup> | WST 2 R/125         | 125 |    |    |    | 0,990        | 316 422       | MST 2 R/125 K <sup>(1)</sup>  | 317 062       |
| MST 2 R/125 P              | WST 2 R/125 P       | 150 |    |    |    | 1,010        | 316 423       | MST 2 R/125 KP <sup>(1)</sup> | 317 063       |

## Track clamp for round cables and hoses



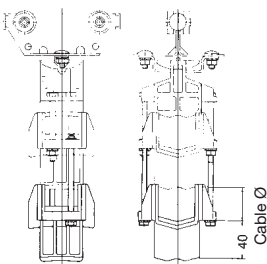
Bumper stop

| Type      | for<br>Carrier type | LE<br>mm | Weight<br>kg | Order-<br>No. |
|-----------|---------------------|----------|--------------|---------------|
| EST 1-2 R | WST 2 R (all types) | 140      | 0,338        | 313 321       |

Pufferanschlag PS 2-1 (PS 2-1 G) ist gesondert zu bestellen.

## Support saddle for round cables and hoses

for additional tier

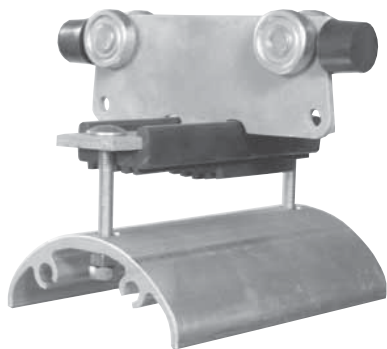


| Type | for<br>Carrier typ  | Weight<br>kg | Order-<br>No. |
|------|---------------------|--------------|---------------|
| LAR  | WST 2 R (all types) | 0,110        | 312 500       |

<sup>(1)</sup> w/o Bumper

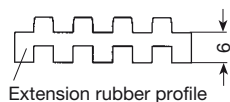
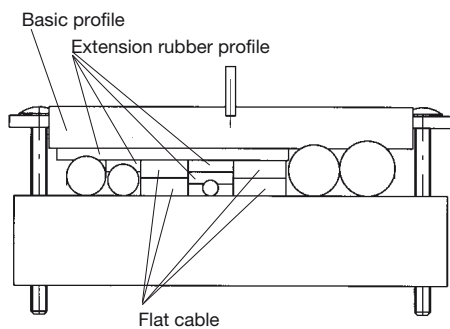
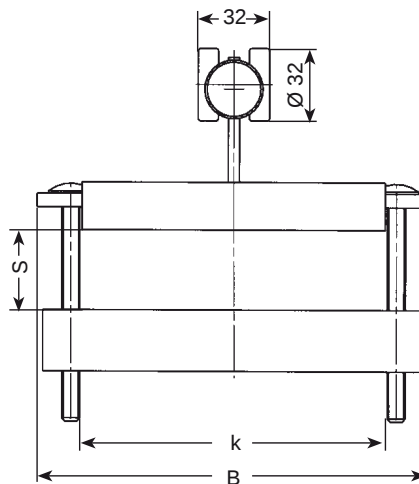
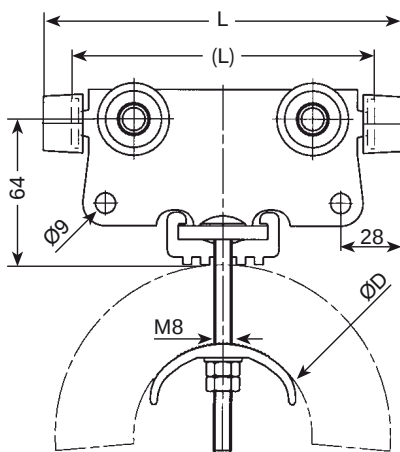


## S2 CABLE CARRIERS AND ACCESSORIES – Steel type –



### Engineering Data

|                     |                                                                                                                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                | WST 2 FR                                                                                                                                                                                                                                                                          |
| Wheels              | hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water – 2 metal sealings<br>Temperature resistance Lub. Grease of wheels –30° C to +125° C<br>Travelling speed ca. 100 m/min.<br>To be used with adequate tension relief ropes. |
| Material            | Carrier body: steel galvanized<br>Support saddle: aluminium<br>Bumper: EPDM<br>Hardware galvanized<br>Temperatur resistance: – 30° C to +100° C                                                                                                                                   |
| Max. cable load     | max. 35 kg per carrier                                                                                                                                                                                                                                                            |
| Depth of cable loop | in curves max. 0,3 x track radius,<br>consider tension relief                                                                                                                                                                                                                     |
| for corrosive sites | use system WST 2 FR-E                                                                                                                                                                                                                                                             |



**Collecting clamp for round cables:**  
Extension rubber profile can be ordered per meter (order no.: 348 845)



## S2 CABLE CARRIERS AND ACCESSORIES – Steel type–



### Cable carrier WST 2 FR:

| Type                    | max. clamping capacity<br>in mm<br>height x width | L<br>mm | (L)<br>mm | B<br>mm | D<br>mm | Weight<br>kg | Order-<br>No. |
|-------------------------|---------------------------------------------------|---------|-----------|---------|---------|--------------|---------------|
| WST 2 FR/125- 80 B175 P | 18 x 130                                          | 125     | –         | 175     | 80      | 1,09         | 316 895       |
| WST 2 FR/125- 80 B225 P | 18 x 180                                          | 125     | –         | 225     | 80      | 1,22         | 316 896       |
| WST 2 FR/135- 80 B175   | 22 x 130                                          | –       | 135       | 175     | 80      | 1,17         | 316 897       |
| WST 2 FR/135- 80 B225   | 22 x 180                                          | –       | 135       | 225     | 80      | 1,30         | 316 898       |
| WST 2 FR/160- 80 B175 P | 35 x 130                                          | 160     | –         | 175     | 80      | 1,17         | 316 899       |
| WST 2 FR/160- 80 B225 P | 35 x 180                                          | 160     | –         | 225     | 80      | 1,30         | 316 900       |
| WST 2 FR/160-100 B175 P | 25 x 130                                          | 160     | –         | 175     | 100     | 1,25         | 316 901       |
| WST 2 FR/160-100 B225 P | 25 x 180                                          | 160     | –         | 225     | 100     | 1,42         | 316 902       |
| WST 2 FR/175- 80 B175   | 42 x 130                                          | –       | 175       | 175     | 80      | 1,27         | 316 903       |
| WST 2 FR/175- 80 B225   | 42 x 180                                          | –       | 175       | 225     | 80      | 1,40         | 316 904       |
| WST 2 FR/175-100 B175   | 32 x 130                                          | –       | 175       | 175     | 100     | 1,35         | 316 905       |
| WST 2 FR/175-100 B225   | 32 x 180                                          | –       | 175       | 225     | 100     | 1,52         | 316 906       |
| WST 2 FR/200- 80 B175 P | 55 x 130                                          | 200     | –         | 175     | 80      | 1,27         | 316 907       |
| WST 2 FR/200- 80 B225 P | 55 x 180                                          | 200     | –         | 225     | 80      | 1,40         | 316 908       |
| WST 2 FR/200-100 B175 P | 45 x 130                                          | 200     | –         | 175     | 100     | 1,35         | 316 909       |
| WST 2 FR/200-100 B225 P | 45 x 180                                          | 200     | –         | 225     | 100     | 1,52         | 316 910       |
| WST 2 FR/200-140 B175 P | 25 x 130                                          | 200     | –         | 175     | 140     | 1,59         | 316 911       |
| WST 2 FR/200-140 B225 P | 25 x 180                                          | 200     | –         | 225     | 140     | 1,83         | 316 912       |
| WST 2 FR/225-100 B175   | 58 x 130                                          | –       | 225       | 175     | 100     | 1,47         | 316 913       |
| WST 2 FR/225-100 B225   | 58 x 180                                          | –       | 225       | 225     | 100     | 1,64         | 316 914       |
| WST 2 FR/225-140 B175   | 38 x 130                                          | –       | 225       | 175     | 140     | 1,71         | 316 915       |
| WST 2 FR/225-140 B225   | 38 x 180                                          | –       | 225       | 225     | 140     | 1,95         | 316 916       |
| WST 2 FR/225-170 B175   | 22 x 130                                          | –       | 225       | 175     | 170     | 1,77         | 316 917       |
| WST 2 FR/225-170 B225   | 22 x 180                                          | –       | 225       | 225     | 170     | 2,02         | 316 918       |
| WST 2 FR/250-100 B175 P | 70 x 130                                          | 250     | –         | 175     | 100     | 1,47         | 316 919       |
| WST 2 FR/250-100 B225 P | 70 x 180                                          | 250     | –         | 225     | 100     | 1,64         | 316 920       |
| WST 2 FR/250-140 B175 P | 50 x 130                                          | 250     | –         | 175     | 140     | 1,71         | 316 921       |
| WST 2 FR/250-140 B225 P | 50 x 180                                          | 250     | –         | 225     | 140     | 1,95         | 316 922       |
| WST 2 FR/250-170 B175 P | 35 x 130                                          | 250     | –         | 175     | 170     | 1,77         | 316 923       |
| WST 2 FR/250-170 B225 P | 35 x 180                                          | 250     | –         | 225     | 170     | 2,02         | 316 924       |
| WST 2 FR/250-200 B175 P | 20 x 135                                          | 250     | –         | 175     | 200     | 2,30         | 317 205       |
| WST 2 FR/250-200 B225 P | 20 x 135                                          | 250     | –         | 225     | 200     | 2,60         | 317 206       |
| WST 2 FR/265-140 B175   | 58 x 130                                          | –       | 265       | 175     | 140     | 1,81         | 316 925       |
| WST 2 FR/265-140 B225   | 58 x 180                                          | –       | 265       | 225     | 140     | 2,05         | 316 926       |
| WST 2 FR/265-170 B175   | 42 x 130                                          | –       | 265       | 175     | 170     | 1,87         | 316 927       |
| WST 2 FR/265-170 B225   | 42 x 180                                          | –       | 265       | 225     | 170     | 2,12         | 316 928       |
| WST 2 FR/265-200 B175   | 27 x 135                                          | –       | 265       | 175     | 200     | 2,40         | 317 207       |
| WST 2 FR/265-200 B225   | 27 x 185                                          | –       | 265       | 225     | 200     | 2,70         | 317 208       |
| WST 2 FR/290-140 B175 P | 70 x 130                                          | 290     | –         | 175     | 140     | 1,81         | 316 929       |
| WST 2 FR/290-140 B225 P | 70 x 180                                          | 290     | –         | 225     | 140     | 2,05         | 316 930       |
| WST 2 FR/290-170 B175 P | 55 x 130                                          | 290     | –         | 175     | 170     | 1,87         | 316 931       |
| WST 2 FR/290-170 B225 P | 55 x 180                                          | 290     | –         | 225     | 170     | 2,12         | 316 932       |
| WST 2 FR/290-200 B175 P | 40 x 135                                          | 290     | –         | 175     | 200     | 2,40         | 317 209       |
| WST 2 FR/290-200 B225 P | 40 x 185                                          | 290     | –         | 225     | 200     | 2,70         | 317 210       |
| WST 2 FR/300-170 B175   | 60 x 130                                          | –       | 300       | 175     | 170     | 1,95         | 316 933       |
| WST 2 FR/300-170 B225   | 60 x 180                                          | –       | 300       | 225     | 170     | 2,20         | 316 934       |
| WST 2 FR/300-200 B175   | 45 x 135                                          | –       | 300       | 175     | 200     | 2,50         | 317 211       |
| WST 2 FR/300-200 B225   | 45 x 185                                          | –       | 300       | 225     | 200     | 2,80         | 317 212       |
| WST 2 FR/300-230 B175   | 30 x 130                                          | –       | 300       | 175     | 230     | 2,90         | 317 074       |
| WST 2 FR/300-230 B225   | 30 x 180                                          | –       | 300       | 225     | 230     | 3,40         | 317 075       |
| WST 2 FR/325-170 B175 P | 72 x 130                                          | 325     | –         | 175     | 170     | 1,95         | 316 935       |
| WST 2 FR/325-170 B225 P | 72 x 180                                          | 325     | –         | 225     | 170     | 2,20         | 316 936       |
| WST 2 FR/325-200 B175 P | 57 x 135                                          | 325     | –         | 175     | 200     | 2,50         | 317 213       |
| WST 2 FR/325-200 B225 P | 57 x 185                                          | 325     | –         | 225     | 200     | 2,80         | 317 214       |
| WST 2 FR/325-230 B175 P | 42 x 130                                          | 325     | –         | 175     | 230     | 2,90         | 317 076       |
| WST 2 FR/325-230 B225 P | 42 x 180                                          | 325     | –         | 225     | 230     | 3,40         | 317 077       |

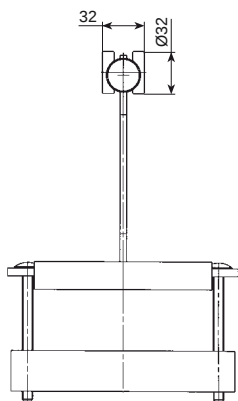
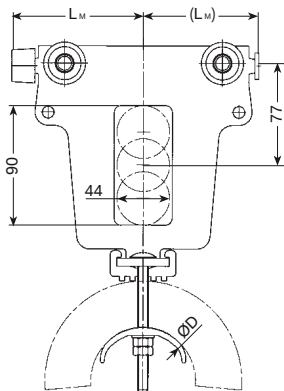


# LEAD CARRIER

## S 2 CABLE CARRIERS – Steel type –



### Lead carriers MST 2 FR



| Type                           | for Cable carrier                                                             | L <sub>M</sub><br>mm | (L <sub>M</sub> )<br>mm | D<br>mm | Weight<br>kg | Order-<br>No. |
|--------------------------------|-------------------------------------------------------------------------------|----------------------|-------------------------|---------|--------------|---------------|
| <b>MST 2 FR/175- 80 B175</b>   | WST 2 FR/135- 80 B175<br>WST 2 FR/175- 80 B175                                | –                    | 88                      | 80      | 1,51         | 316 952       |
| <b>MST 2 FR/175- 80 B225</b>   | WST 2 FR/135- 80 B225<br>WST 2 FR/175- 80 B225                                | –                    | 88                      | 80      | 1,65         | 316 953       |
| <b>MST 2 FR/175-100 B175</b>   | WST 2 FR/175-100 B175                                                         | –                    | 88                      | 100     | 1,59         | 316 954       |
| <b>MST 2 FR/175-100 B225</b>   | WST 2 FR/175-100 B225                                                         | –                    | 88                      | 100     | 1,77         | 316 955       |
| <b>MST 2 FR/200- 80 B175 P</b> | WST 2 FR/125- 80 B175 P<br>WST 2 FR/160- 80 B175 P<br>WST 2 FR/200- 80 B175 P | 100                  | –                       | 80      | 1,51         | 316 956       |
| <b>MST 2 FR/200- 80 B225 P</b> | WST 2 FR/125- 80 B225 P<br>WST 2 FR/160- 80 B225 P<br>WST 2 FR/200- 80 B225 P | 100                  | –                       | 80      | 1,65         | 316 957       |
| <b>MST 2 FR/200-100 B175 P</b> | WST 2 FR/160-100 B175 P<br>WST 2 FR/200-100 B175 P                            | 100                  | –                       | 100     | 1,59         | 316 958       |
| <b>MST 2 FR/200-100 B225 P</b> | WST 2 FR/160-100 B225 P<br>WST 2 FR/200-100 B225 P                            | 100                  | –                       | 100     | 1,77         | 316 959       |
| <b>MST 2 FR/200-140 B175 P</b> | WST 2 FR/200-140 B175 P                                                       | 100                  | –                       | 140     | 1,83         | 316 960       |
| <b>MST 2 FR/200-140 B225 P</b> | WST 2 FR/200-140 B225 P                                                       | 100                  | –                       | 140     | 2,08         | 316 961       |
| <b>MST 2 FR/300-100 B175</b>   | WST 2 FR/225-100 B175                                                         | –                    | 150                     | 100     | 1,93         | 316 962       |
| <b>MST 2 FR/300-100 B225</b>   | WST 2 FR/225-100 B225                                                         | –                    | 150                     | 100     | 2,11         | 316 963       |
| <b>MST 2 FR/300-140 B175</b>   | WST 2 FR/225-140 B175<br>WST 2 FR/265-140 B175                                | –                    | 150                     | 140     | 2,17         | 316 964       |
| <b>MST 2 FR/300-140 B225</b>   | WST 2 FR/225-140 B225<br>WST 2 FR/265-140 B225                                | –                    | 150                     | 140     | 2,42         | 316 965       |
| <b>MST 2 FR/300-170 B175</b>   | WST 2 FR/225-170 B175<br>WST 2 FR/265-170 B175<br>WST 2 FR/300-170 B175       | –                    | 150                     | 170     | 2,23         | 316 966       |
| <b>MST 2 FR/300-170 B225</b>   | WST 2 FR/225-170 B225<br>WST 2 FR/265-170 B225<br>WST 2 FR/300-170 B225       | –                    | 150                     | 170     | 2,49         | 316 967       |
| <b>MST 2 FR/300-200 B175</b>   | WST 2 FR/265-200 B175<br>WST 2 FR/300-120 B175                                | –                    | 150                     | 200     | 2,73         | 317 217       |
| <b>MST 2 FR/300-200 B225</b>   | WST 2 FR/265-200 B225<br>WST 2 FR/300-200 B225                                | –                    | 150                     | 200     | 3,10         | 317 218       |
| <b>MST 2 FR/300-230 B175</b>   | WST 2 FR/300-230 B175                                                         | –                    | 150                     | 230     | 3,17         | 317 078       |
| <b>MST 2 FR/300-230 B225</b>   | WST 2 FR/300-230 B225                                                         | –                    | 150                     | 230     | 3,70         | 317 079       |
| <b>MST 2 FR/325-100 B175 P</b> | WST 2 FR/250-100 B175 P                                                       | 162                  | –                       | 100     | 1,93         | 316 968       |
| <b>MST 2 FR/325-100 B225 P</b> | WST 2 FR/250-100 B225 P                                                       | 162                  | –                       | 100     | 2,11         | 316 969       |
| <b>MST 2 FR/325-140 B175 P</b> | WST 2 FR/250-140 B175 P<br>WST 2 FR/290-140 B175 P                            | 162                  | –                       | 140     | 2,17         | 316 970       |
| <b>MST 2 FR/325-140 B225 P</b> | WST 2 FR/250-140 B225 P<br>WST 2 FR/290-140 B225 P                            | 162                  | –                       | 140     | 2,42         | 316 971       |
| <b>MST 2 FR/325-170 B175 P</b> | WST 2 FR/250-170 B175 P<br>WST 2 FR/290-170 B175 P<br>WST 2 FR/325-170 B175 P | 162                  | –                       | 170     | 2,23         | 316 972       |
| <b>MST 2 FR/325-170 B225 P</b> | WST 2 FR/250-170 B225 P<br>WST 2 FR/290-170 B225 P<br>WST 2 FR/325-170 B225 P | 162                  | –                       | 170     | 2,49         | 316 973       |
| <b>MST 2 FR/325-200 B175 P</b> | WST 2 FR/250-200 B175 P<br>WST 2 FR/290-200 B175 P<br>WST 2 FR/325-200 B175 P | 162                  | –                       | 200     | 2,73         | 317 219       |
| <b>MST 2 FR/325-200 B225 P</b> | WST 2 FR/250-200 B225 P<br>WST 2 FR/290-200 B225 P<br>WST 2 FR/325-200 B225 P | 162                  | –                       | 200     | 3,10         | 317 220       |
| <b>MST 2 FR/325-230 B175 P</b> | WST 2 FR/325-230 B175 P                                                       | 162                  | –                       | 230     | 3,17         | 317 080       |
| <b>MST 2 FR/325-230 B225 P</b> | WST 2 FR/325-230 B225 P                                                       | 162                  | –                       | 230     | 3,70         | 317 081       |



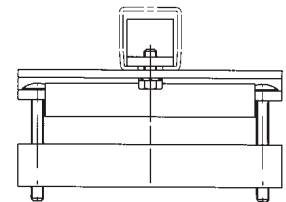
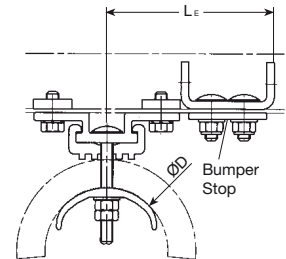
## S 2 TRACK CLAMPS – Steel type –



### Track clamps EST 2 FR

Bumper stop PS 2-1; PS 2-1 G to be ordered separately

| Type                     | for Cable carrier       | L <sub>E</sub><br>mm | D<br>mm | Weight<br>kg | Order-<br>No. |
|--------------------------|-------------------------|----------------------|---------|--------------|---------------|
| <b>EST 2 FR/ 80 B175</b> | WST 2 FR/125- 80 B175 P | 165                  | 80      | 0,78         | 316 986       |
|                          | WST 2 FR/135- 80 B175   | 165                  |         |              |               |
|                          | WST 2 FR/160- 80 B175 P | 165                  |         |              |               |
|                          | WST 2 FR/175- 80 B175   | 165                  |         |              |               |
|                          | WST 2 FR/200- 80 B175P  | 165                  |         |              |               |
| <b>EST 2 FR/ 80 B225</b> | WST 2 FR/125- 80 B225 P | 165                  | 80      | 0,92         | 316 987       |
|                          | WST 2 FR/135- 80 B225   | 165                  |         |              |               |
|                          | WST 2 FR/160- 80 B225 P | 165                  |         |              |               |
|                          | WST 2 FR/175- 80 B225   | 165                  |         |              |               |
|                          | WST 2 FR/200- 80 B225 P | 165                  |         |              |               |
| <b>EST 2 FR/100 B175</b> | WST 2 FR/160-100 B175 P | 165                  | 100     | 0,86         | 316 988       |
|                          | WST 2 FR/175-100 B175   | 165                  |         |              |               |
|                          | WST 2 FR/200-100 B175P  | 165                  |         |              |               |
|                          | WST 2 FR/225-100 B175   | 170                  |         |              |               |
|                          | WST 2 FR/250-100 B175 P | 180                  |         |              |               |
| <b>EST 2 FR/100 B225</b> | WST 2 FR/160-100 B225 P | 165                  | 100     | 1,04         | 316 989       |
|                          | WST 2 FR/175-100 B225   | 165                  |         |              |               |
|                          | WST 2 FR/200-100 B225 P | 165                  |         |              |               |
|                          | WST 2 FR/225-100 B225   | 170                  |         |              |               |
|                          | WST 2 FR/250-100 B225 P | 180                  |         |              |               |
| <b>EST 2 FR/140 B175</b> | WST 2 FR/200-140 B175 P | 165                  | 140     | 1,10         | 316 990       |
|                          | WST 2 FR/225-140 B175   | 170                  |         |              |               |
|                          | WST 2 FR/250-140 B175 P | 180                  |         |              |               |
|                          | WST 2 FR/265-140 B175   | 190                  |         |              |               |
|                          | WST 2 FR/290-140 B175 P | 200                  |         |              |               |
| <b>EST 2 FR/140 B225</b> | WST 2 FR/200-140 B225 P | 165                  | 140     | 1,35         | 316 991       |
|                          | WST 2 FR/225-140 B225   | 170                  |         |              |               |
|                          | WST 2 FR/250-140 B225 P | 180                  |         |              |               |
|                          | WST 2 FR/265-140 B225   | 190                  |         |              |               |
|                          | WST 2 FR/290-140 B225 P | 200                  |         |              |               |
| <b>EST 2 FR/170 B175</b> | WST 2 FR/225-170 B175   | 170                  | 170     | 1,16         | 316 992       |
|                          | WST 2 FR/250-170 B175 P | 180                  |         |              |               |
|                          | WST 2 FR/265-170 B175   | 190                  |         |              |               |
|                          | WST 2 FR/290-170 B175 P | 200                  |         |              |               |
|                          | WST 2 FR/300-170 B175   | 205                  |         |              |               |
| <b>EST 2 FR/170 B225</b> | WST 2 FR/325-170 B175 P | 220                  | 170     | 1,42         | 316 993       |
|                          | WST 2 FR/225-170 B225   | 170                  |         |              |               |
|                          | WST 2 FR/250-170 B225 P | 180                  |         |              |               |
|                          | WST 2 FR/265-170 B225   | 190                  |         |              |               |
|                          | WST 2 FR/290-170 B225 P | 200                  |         |              |               |
| <b>EST 2 FR/200 B175</b> | WST 2 FR/300-170 B225   | 205                  | 200     | 1,70         | 317 215       |
|                          | WST 2 FR/325-170 B225 P | 220                  |         |              |               |
|                          | WST 2 FR/250-200 B175 P | 200                  |         |              |               |
|                          | WST 2 FR/265-200 B175   | 135                  |         |              |               |
|                          | WST 2 FR/290-200 B175 P | 145                  |         |              |               |
| <b>EST 2 FR/200 B225</b> | WST 2 FR/300-200 B175   | 150                  | 200     | 2,10         | 317 216       |
|                          | WST 2 FR/325-200 B175 P | 165                  |         |              |               |
|                          | WST 2 FR/250-200 B225 P | 125                  |         |              |               |
|                          | WST 2 FR/265-200 B225   | 135                  |         |              |               |
|                          | WST 2 FR/290-200 B225 P | 145                  |         |              |               |
| <b>EST 2 FR/230 B175</b> | WST 2 FR/300-200 B225   | 150                  | 230     | 2,10         | 317 082       |
|                          | WST 2 FR/325-200 B225 P | 165                  |         |              |               |
| <b>EST 2 FR/230 B225</b> | WST 2 FR/300-230 B175   | 205                  | 230     | 2,62         | 317 083       |
|                          | WST 2 FR/325-230 B175 P | 220                  |         |              |               |



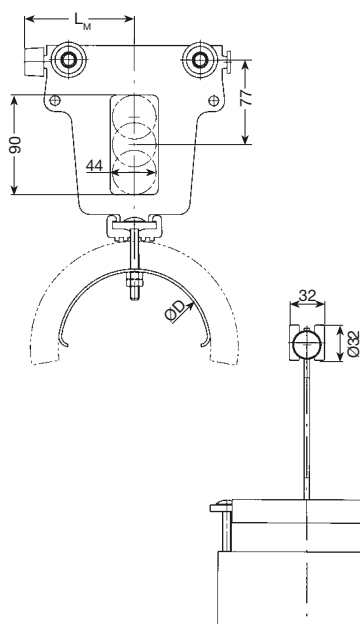
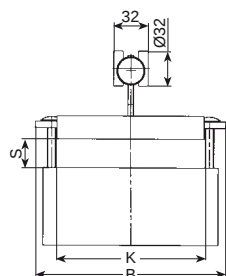
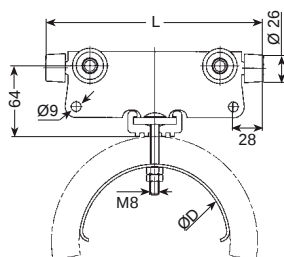


# S2-E CABLE CARRIERS AND ACCESSORIES

– Stainless steel type –

**acid  
proof**

**Stain-  
less**



## Engineering Data

|                 |                                                                                                                                                                                          |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type            | WST 2 FR E                                                                                                                                                                               |
| Wheels          | stainless steel rollers with precision ball bearing, sealed against dust and splash water. Temperature resistance Lub. Grease of wheels -30°C to +150°C, Travelling speed ca. 100 m/min. |
| Material        | Wagenkörper: V4A<br>Leitungsauflage: V4A<br>Puffer: EPDM<br>Schrauben und Muttern: V4A<br>Gebrauchstemperatur: - 30° C bis +80° C                                                        |
| Max. cable load | max. 20 kg per Carrier                                                                                                                                                                   |

## Cable carrier WST 2 FR E

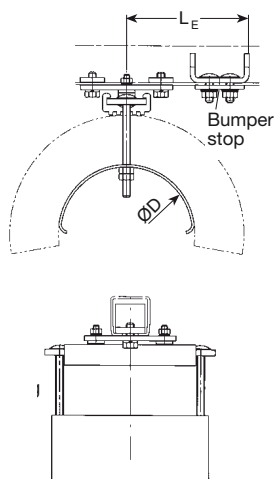
| Type                      | max. clamping<br>capacity<br>in mm<br>height x width | L<br>mm | B<br>mm | D<br>mm | Weight<br>kg | Order-<br>No. |
|---------------------------|------------------------------------------------------|---------|---------|---------|--------------|---------------|
| WST 2 FR/200-140 B175-E P | 25 x 135                                             | 200     | 175     | 140     | 1,80         | 316 939       |
| WST 2 FR/250-140 B175-E P | 50 x 135                                             | 250     | 175     | 140     | 1,90         | 316 945       |
| WST 2 FR/250-170 B175-E P | 35 x 135                                             | 250     | 175     | 170     | 2,23         | 316 947       |

## Lead carriers MST 2 FR E

| Type                      | for Cable carrier         | L <sub>M</sub><br>mm | D<br>mm | Weight<br>kg | Order-<br>No. |
|---------------------------|---------------------------|----------------------|---------|--------------|---------------|
| MST 2 FR/200-140 B175-E P | WST 2 FR/200-140 B175-E P | 100                  | 140     | 2,03         | 316 976       |
| MST 2 FR/325-140 B175-E P | WST 2 FR/250-140 B175-E P | 162                  | 140     | 2,37         | 316 982       |
| MST 2 FR/325-170 B175-E P | WST 2 FR/250-170 B175-E P | 162                  | 170     | 2,70         | 316 984       |

## Track clamps EST 2 FR E

Bumper stop PS 2-1 E to be ordered separately



| Type                 | for Cable carrier         | L <sub>E</sub><br>mm | D<br>mm | Weight<br>kg | Order-<br>No. |
|----------------------|---------------------------|----------------------|---------|--------------|---------------|
| EST 2 FR/ 140 B175-E | WST 2 FR/200-140 B175-E P | 165                  | 140     | 1,30         | 316 996       |
| EST 2 FR/ 170 B175-E | WST 2 FR/250-170 B175-E P | 180                  | 170     | 1,62         | 316 998       |



## S 2 CABLE CARRIERS AND ACCESSORIES

- Steel type -



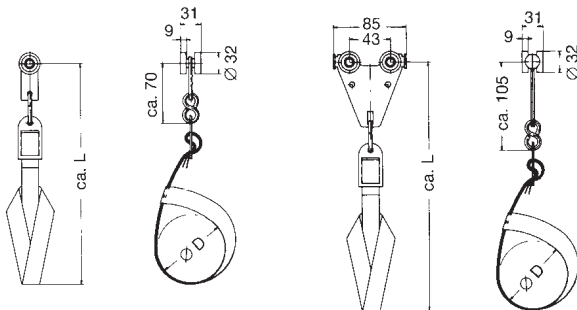
### Engineering Data

| Type                | WR 2-Sch, WST 2-Sch                                                                                                                                                                            |                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Wheels              | ball bearings sealed against dust and splash water – 2 metal sealings hardened, galvanized, Temperature resistance Lub. grease of wheels: – 30° C to + 125° C, Travelling speed: ca. 80 m/min. | Polyamid rollers on bushed bearings<br>ca. 60 m/min..    |
| Material            | Carrier body: steel, galvanized<br>S-Hook: steel, galvanized<br>Cable-loop: Polyamid<br>Hardware: galvanized<br>Temperature resistance: – 30° C to +100° C                                     |                                                          |
| Max. cable load     | max. 15 kg per carrier WR 2-Sch<br>max. 30 kg per carrier WST 2-Sch                                                                                                                            | max. 6 kg p.c. WR 2-Sch-K<br>max. 12 kg p.c. WST 2-Sch-K |
| for corrosive sites | use system S 2-E                                                                                                                                                                               |                                                          |

### Cable Carriers for round cables and hoses

WR 2-Sch

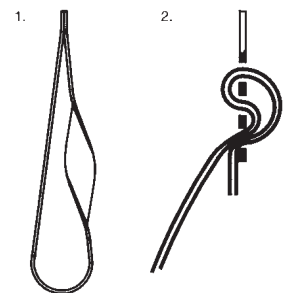
WST 2-Sch



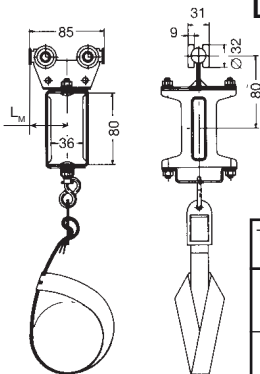
| Type          | Ø D mm | L mm | Weight kg | Order-No. | Type            | Order-No. |
|---------------|--------|------|-----------|-----------|-----------------|-----------|
| WR 2-Sch/ 80  | 80     | 210  | 0,160     | 316 600   | WR 2-Sch/ 80 K  | 317 064   |
| WR 2-Sch/160  | 160    | 290  | 0,170     | 316 601   | WR 2-Sch/160 K  | 317 065   |
| WST 2-Sch/ 80 | 80     | 240  | 0,370     | 316 550   | WST 2-Sch/ 80 K | 317 066   |
| WST 2-Sch/160 | 160    | 320  | 0,380     | 316 555   | WST 2-Sch/160 K | 317 067   |

#### Installation information:

1. prepare ribbon ends as shown
2. pull all ends thru flap.
3. form a loop
4. attach flap to S-hook

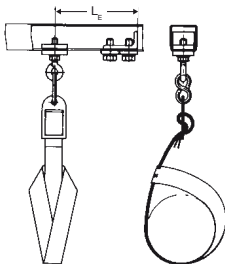


### Lead Carriers for round cables and hoses



| Type          | for Carrier type | Weight kg | Order-No. | Type            | Order-No. |
|---------------|------------------|-----------|-----------|-----------------|-----------|
| MST 2-Sch/ 80 | WR 2-Sch/ 80     | 0,780     | 316 556   | MST 2-Sch/ 80 K | 317 068   |
|               | WST 2-Sch/ 80    |           |           |                 |           |
| MST 2-Sch/160 | WR 2-Sch/160     | 0,790     | 316 557   | MST 2-Sch/160 K | 317 069   |
|               | WST 2-Sch/160    |           |           |                 |           |

### Track Clamps for round cables and hoses

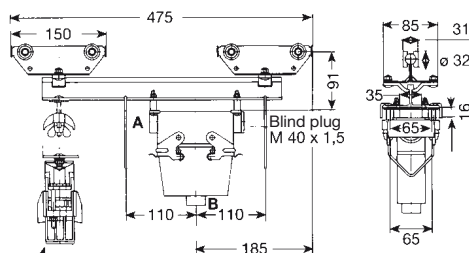


Bumper stop  
PS 2-1 or PS 2-1 G  
to be ordered  
separately.

| Type            | for Carrier type | L <sub>E</sub> mm | Weight kg | Order-No. |
|-----------------|------------------|-------------------|-----------|-----------|
| EST 1-2-Sch/ 80 | WR 2-Sch/ 80     | 110               | 0,140     | 312 879   |
|                 | WST 2-Sch/ 80    |                   |           |           |
| EST 1-2-Sch/160 | WR 2-Sch/160     |                   | 0,150     | 312 880   |
|                 | WST 2-Sch/160    |                   |           |           |



## Control Carriers with multipole plug-in



Design for round cable clamp ST-ST 2 R

| Type <sup>(1)</sup>                    | plug-in-device<br>DIN 43652 | Weight<br>kg | Order-<br>No. |
|----------------------------------------|-----------------------------|--------------|---------------|
| <b>ST-ST 2/16 M</b>                    | 16pole                      | 2,300        | 317 144       |
| <b>ST-ST 2/24 M</b>                    | 24pole                      | 2,500        | 317 143       |
| Design for round cable clamp ST-ST 2 R |                             |              |               |
| <b>ST-ST 2 R/16 M</b>                  | 16pole                      | 2,400        | 317 146       |
| <b>ST-ST 2 R/24 M</b>                  | 24pole                      | 2,600        | 317 145       |

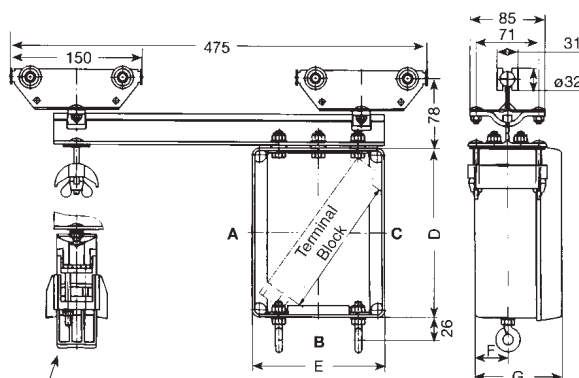
**Design:**

Carrier body: steel, galvanized      Support bar: aluminium  
Wheels: steel ball bearings      Plug: cast iron

|                                                             |                                                |
|-------------------------------------------------------------|------------------------------------------------|
| Cable glands for 16-poles<br>A-Side: Pg 29<br>B-Side: Pg 21 | for 24-poles<br>A-Side: Pg 29<br>B-Side: Pg 29 |
|-------------------------------------------------------------|------------------------------------------------|

|                        |                                            |
|------------------------|--------------------------------------------|
| Max. cable load: 25 kg | Temperature resistance: - 30° C to +100° C |
|------------------------|--------------------------------------------|

### Control Carriers without Brake



/ST-ST 2 R saddle for round cable

| Type <sup>(1)</sup>                    | D   | E   | F  | G   | Weight kg | Order-No. |
|----------------------------------------|-----|-----|----|-----|-----------|-----------|
|                                        | mm  |     |    |     |           |           |
| <b>ST-ST 2/A 1</b>                     | 190 | 150 | 38 | 100 | 3,100     | 316 456   |
| <b>ST-ST 2/A 2</b>                     | 280 | 200 | 62 | 140 | 4,500     | 316 455   |
| Design for round cable clamp ST-ST 2 R |     |     |    |     |           |           |
| <b>ST-ST 2 R/A 1</b>                   | 190 | 150 | 38 | 100 | 3,200     | 316 525   |
| <b>ST-ST 2 R/A 2</b>                   | 280 | 200 | 62 | 140 | 4,600     | 316 526   |

**Design:**

Carrier body: steel, galvanized      Support bar: aluminium  
Wheels: steel ball bearings      Plug: PVC

Max. cable load: 25 kg  
Temperature resistance: - 30° C to +100° C

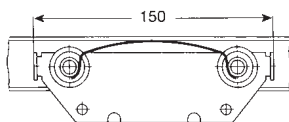
**Attention:** The connection box must be earthed with a protective earth conductor terminal Type EK 2.5 N PA!

| ST-ST 2/A 1<br>ST-ST 2 R/A 1 |                          |                          | ST-ST 2/A 2<br>ST-ST 2 R/A 2 |                          |                          |
|------------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|
| Cable glands                 | max.<br>number<br>A-Side | max.<br>number<br>B-Side | Cable glands                 | max.<br>number<br>A-Side | max.<br>number<br>B-Side |
| <b>M 20 x 1,5</b>            | 6                        | 2                        | <b>M 20 x 1,5</b>            | 12                       | 6                        |
| <b>M 25 x 1,5</b>            | 5                        | 1                        | <b>M 25 x 1,5</b>            | 10                       | 6                        |
| <b>M 32 x 1,5</b>            | 3                        | 1                        | <b>M 32 x 1,5</b>            | 8                        | 4                        |
| <b>M 40 x 1,5</b>            | 2                        | 1                        | <b>M 40 x 1,5</b>            | 4                        | 1                        |
| <b>M 50 x 1,5</b>            | 2                        | –                        | <b>M 50 x 1,5</b>            | 3                        | 1                        |
| <b>M 63 x 1,5</b>            | 2                        | –                        | <b>M 63 x 1,5</b>            | 3                        | 1                        |

Max. length of Terminal Block A1 = 130 mm  
A2 = 220 mm

## Brake spring for Control Carrier ST - ST 2

The braking device can be installed as an option.



|               |                 |           |           |
|---------------|-----------------|-----------|-----------|
| Type          | Material        | Weight kg | Order-No. |
| <b>BF 2-2</b> | stainless steel | 0.010     | 316 466   |

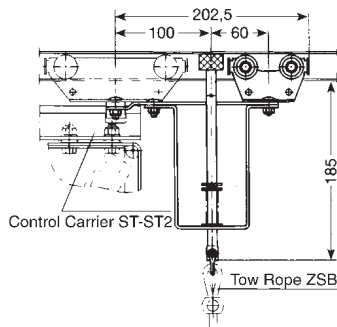


## S 2 CONTROL CARRIER ACCESSORIES

acid  
proof

Stain-  
less

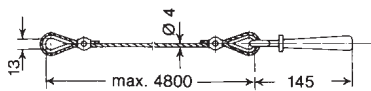
### Brake for Control Carrier



| Type        | Weight<br>kg | Order-No. |
|-------------|--------------|-----------|
| <b>BS 2</b> | 1,840        | 316 458   |

Carrier body: steel, galvanized  
Wheels: steel ball bearings

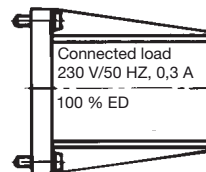
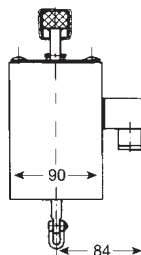
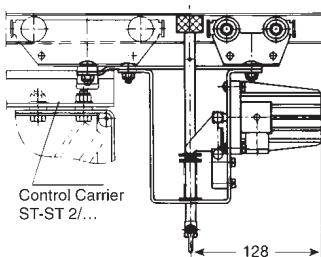
### Tow Rope and Grip for Brake BS 2



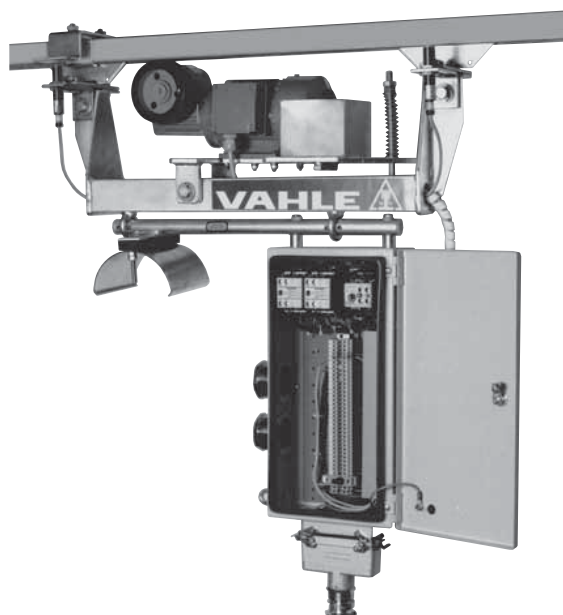
| Type       | Standard length-<br>mm | Weight kg | Order-No. |
|------------|------------------------|-----------|-----------|
| <b>ZSB</b> | 5000                   | 0,250     | 310 850   |

Scope of supply: Grab handle, wire, 2 thimble, 2 cable clamps

### Brake for Control Carrier with AC magnet (WM)



| Type           | Weight<br>kg | Order-No. |
|----------------|--------------|-----------|
| <b>BS 2-WM</b> | 3,000        | 316 457   |

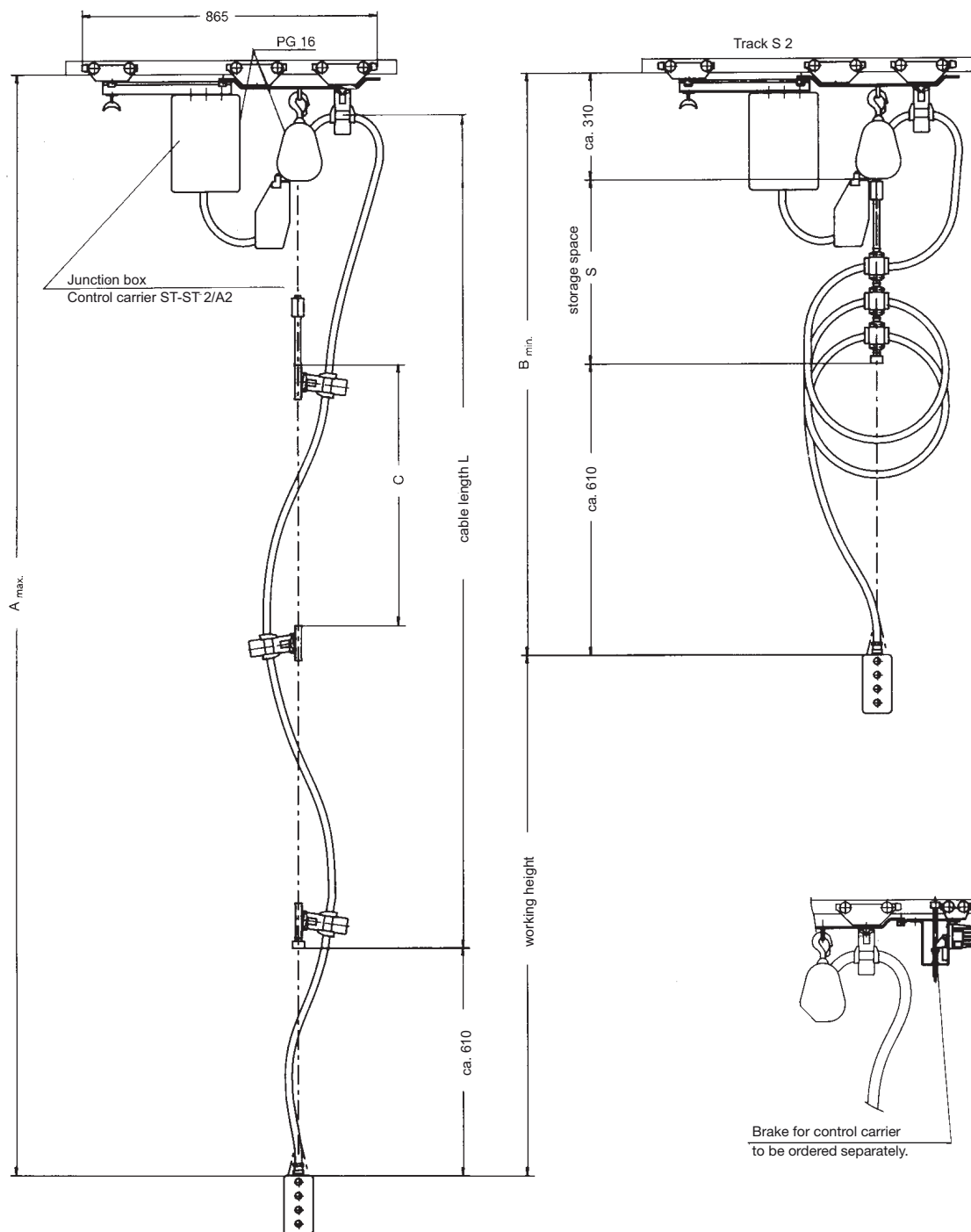


S 2 motor powered  
control carrier



## S 2 CONTROL CARRIERS

with motorized lifting device for pushbutton station



cable length L =  $(H+S) \times 1,05$  (m)  
 attachment intervals =  $\frac{L}{n}$  (m)  
 storage distance S =  $n \times 0,1 \text{ m} + 0,2 \text{ m}$  (m)

H = working height (m)  
 A<sub>max.</sub> = lowest position of pushbutton station (m)  
 B<sub>min.</sub> = highest position of pushbutton station (m)  
 S = storage distance (m)  
 L = length of cable without connecting ends (m)  
 C = attachment intervals of cable loops (m)  
 n = number of cable loops

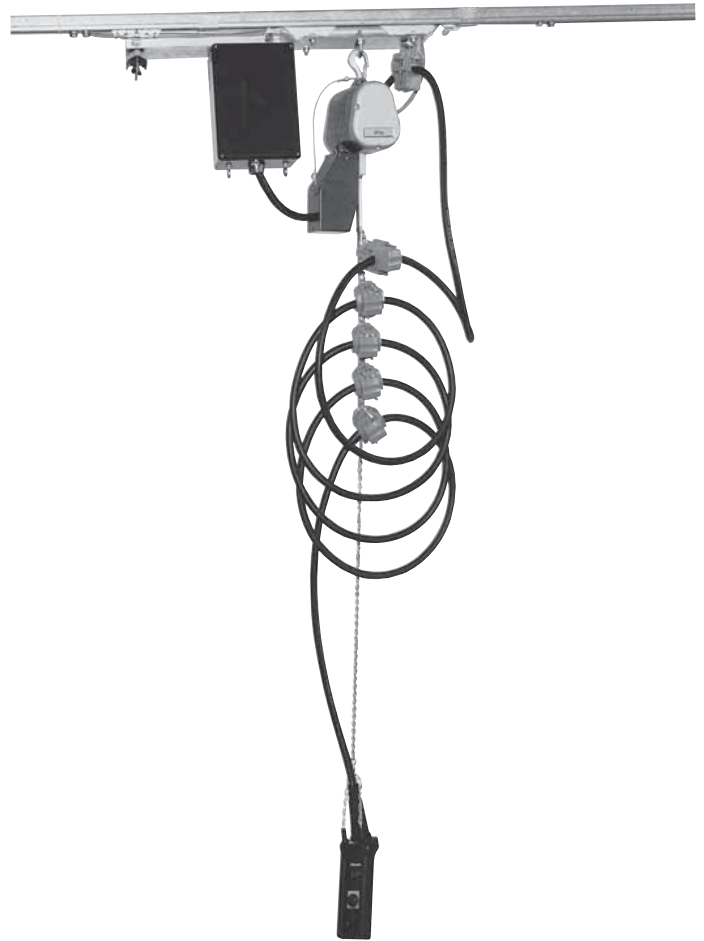
| Type <sup>(1)</sup> | Working height H (m) | A max. (m) | B min. (m) | Storage distance S (m) | Number of cable loops (n) | Permissible load cable and push button station | Weight ca. kg | Order-No. |
|---------------------|----------------------|------------|------------|------------------------|---------------------------|------------------------------------------------|---------------|-----------|
| <b>ST 2-H 1,3</b>   | 1,30                 | 2,55       | 1,25       | 0,33                   | 1                         | 52,000                                         | 18,000        | 317 317   |
| <b>ST 2-H 2,6</b>   | 2,60                 | 3,95       | 1,35       | 0,43                   | 2                         | 51,500                                         | 18,500        | 317 316   |
| <b>ST 2-H 3,9</b>   | 3,90                 | 5,35       | 1,45       | 0,53                   | 3                         | 51,000                                         | 19,000        | 317 315   |
| <b>ST 2-H 5,2</b>   | 5,20                 | 6,75       | 1,55       | 0,63                   | 4                         | 50,500                                         | 19,500        | 317 314   |
| <b>ST 2-H 6,5</b>   | 6,50                 | 8,15       | 1,65       | 0,73                   | 5                         | 50,000                                         | 20,000        | 317 313   |
| <b>ST 2-H 7,8</b>   | 7,80                 | 9,55       | 1,75       | 0,83                   | 6                         | 49,500                                         | 20,500        | 317 312   |
| <b>ST 2-H 9,1</b>   | 9,10                 | 10,95      | 1,85       | 0,93                   | 7                         | 49,000                                         | 21,000        | 317 115   |
| <b>ST 2-H 10,4</b>  | 10,40                | 12,35      | 1,95       | 1,03                   | 8                         | 48,500                                         | 21,500        | 317 311   |
| <b>ST 2-H 11,7</b>  | 11,70                | 13,75      | 2,05       | 1,13                   | 9                         | 48,000                                         | 22,000        | 317 310   |
| <b>ST 2-H 13,0</b>  | 13,00                | 15,15      | 2,15       | 1,23                   | 10                        | 47,500                                         | 22,500        | 317 309   |



## S 2 CONTROL CARRIERS

### Installation and Electrical Connection

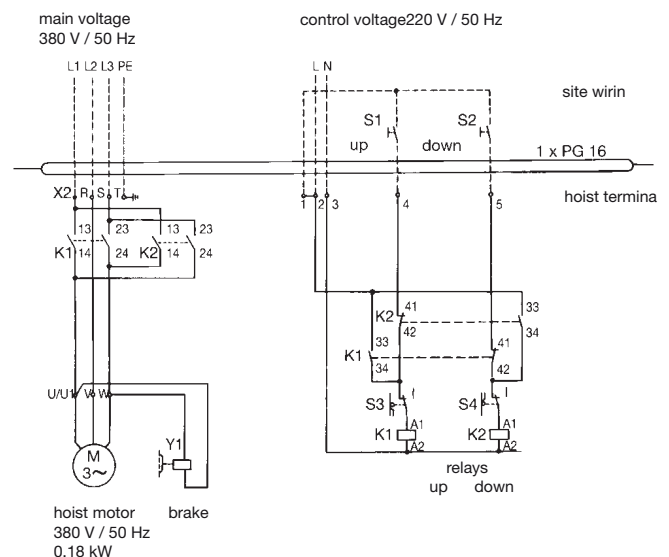
1. Install the track per installation information, using fixpoint hangers only. Support distance in accordance to the load by control carrier, cable and pushbutton station.
2. Install the cable, including min. 3 control conductors (min. 1 mm<sup>2</sup>) to operate the lifting device as shown in the adjacent picture with the pushbutton station in the upper position. We recommend to use rubber sheathed round cable with tension relief core.
3. Mark the cable length  $L = (H+S) \times 1,05$  (connecting ends to the pushbutton station and to the junction box non considered) in dimension C attachment intervals of cable loops (n).
4. Start with the first cable attachment clamp above the pushbutton station and continue to install the cable to the further attachment clamps in spiral loops at dim. C intervals (consider your cable connection length to the pushbutton).
5. Guiding the cable via the upper clamp attached to the control carrier you now enter the junction box and connect your cable to the terminal blocks.
6. The junction box must in addition be provided for 8 terminal blocks and 1 ground for the electrical connection of the lifting device.
7. The connection between the hoist and the junction box must be achieved via an 8-core plus ground cable of min. 1 mm<sup>2</sup> and in accordance to the adjacent wiring diagram.
8. Incoming power 380 V, 50 Hz, to be connected at L1, L2, L3, and ground and the control voltage 220 V, 50 Hz to the terminal clamps no. 2 and 3.
9. Wires at terminal clamps 1, 4, 5 represent connection to the keys S 1 and S 2 (up/down) in the pushbutton station.
10. The function key S 2 (down) can also be installed in an other position, for example in the crane cabin. 2 control conductors are then necessary to be provided via the cable festoon system.



### Commissioning and Adjustment of Limit Switch

11. The pushbutton station will lower automatically when pressing key S 2 (down).
12. The cable will form a spiral around the hoist chain and the pushbutton station will be rotating.
13. Once the pushbutton station has reached the lowest position the limit switch S 4 will switch off the hoist motor.
14. The 5% safety length guarantees a tension relief hanging down of the cable while the hoist chain is carrying the load of the pushbutton station. If this is not the case the limit switch in the chain box would have to be readjusted.
15. When pressing the function key S 1 (up) the pushbutton station will automatically move upward. Limit switch S 3 will switch off the movement.

### Wiring diagram for motorized lifting device



|                  |                                            |
|------------------|--------------------------------------------|
| main voltage:    | 380 V, 50 Hz                               |
| control voltage: | 220 V, 50 Hz                               |
| -----:           | site wiring<br>to pushbutton station       |
| S 1 and S 2:     | key up/down, part of<br>pushbutton station |
| S 3 and S 4:     | limit switch up/down                       |
| K 1 and K 2:     | relays up/down                             |

**For safety reasons and to completely secure the track joints we do recommend welding together the track and the joint clamps in the upper portion.**  
Track and hangers at both ends of the system to be horizontally drilled 9 mm Ø and a hex. bolt M 8 x 60 mm, with nut and washer, pushed through to prevent the track from sliding.

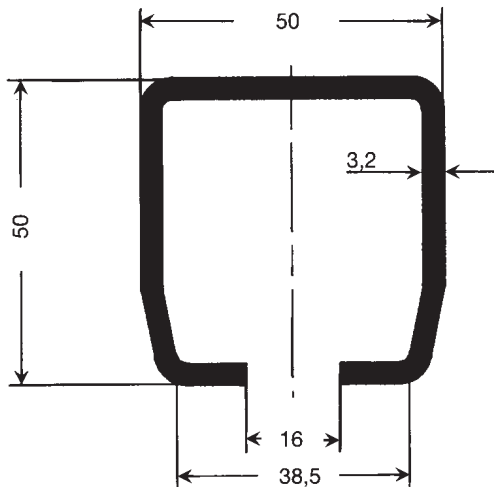


## S 3 TRACK AND ACCESSORIES

acid  
proof

Stain-  
less

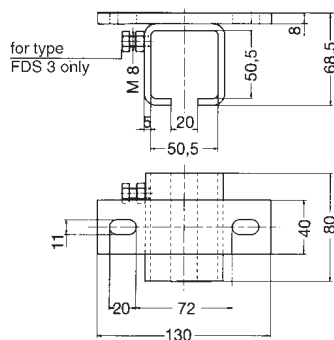
### Track



| Type                            | S 3                                                           | S3A-G   |
|---------------------------------|---------------------------------------------------------------|---------|
| Order-No. -in 6 m sections      | 314 126                                                       | 314 246 |
| Order-No. -surcharge for curves | 314 048                                                       | 314 287 |
| <b>for carrier type</b>         | <b>WST 3</b>                                                  |         |
| Material                        | steel, galvanized                                             | 1.4571  |
| Supply length                   | 6 m                                                           |         |
| <b>Standard support spacing</b> | as per page 48, in straight systems max. 3 m<br>in curves 1 m |         |
| Moment of inertia Jx            | 16,9 cm <sup>4</sup>                                          |         |
| Section Modulus Wx              | 6,1 cm <sup>3</sup>                                           |         |
| Weight                          | 4,050 kg/m                                                    |         |

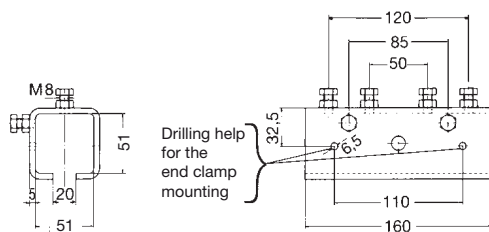
Curves are available on request.

### Hangers underhung



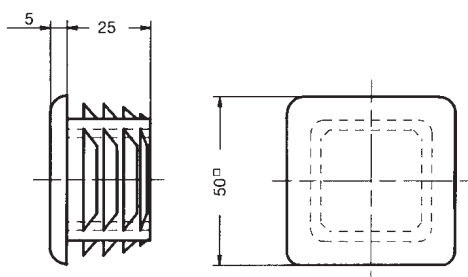
| Type      | Sliding hanger<br>ADS 3 | Fixpoint hanger<br>FDS 3 | Sliding hanger<br>ADS 3-A2 | Fixpoint hanger<br>FDS 3-A2 |
|-----------|-------------------------|--------------------------|----------------------------|-----------------------------|
| Order-No. | 314 014                 | 314 013                  | 314 283                    | 314 284                     |
| Material  | steel, galv.            | steel, galv.             | 1.4301.                    | 1.4301                      |
| Weight    | 0,920 kg                | 0,930 kg                 | 0,920 kg                   | 0,930 kg                    |

### Joint Clamp



| Type      | VS 3              | VS 3-A2  |
|-----------|-------------------|----------|
| Order-No. | 314 008           | 314 285  |
| Material  | steel, galvanized | 1.4301   |
| Weight    | 1,250 kg          | 1,250 kg |

### End Cap



| Type      | KS 3         |
|-----------|--------------|
| Order-No. | 314 016      |
| Material  | polyethylene |
| Weight    | 0,020 kg     |

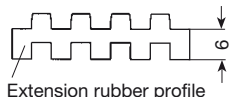
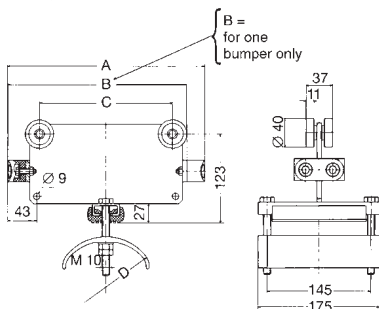


## S 3 CABLE CARRIERS AND ACCESSORIES

– Steel type –



### Cable Carriers for flatform cables



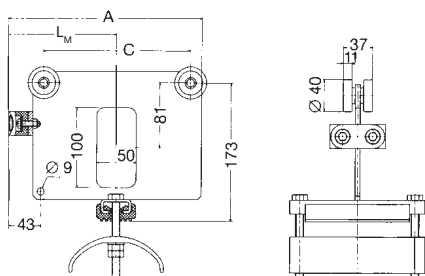
**Assembly clamping of round clamping:**  
The extension profil can be ordered as piece goods  
(see Page 26. (Order-No.: 348 845))

### Engineering Data

| Type                | WST 3                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheels              | ball bearing sealed against dust and splash water, steel hardened, galvanized or with Polyurethane cover<br>Temperature resistance Lub. grease of wheels: – 30° C to + 125° C<br>Travelling speed: ca. 120 m/min. |
| Material            | Carrier body: steel, galvanized<br>Support saddle: light metal<br>Bumper: Neoprene<br>Hardware: galvanized<br>Temperature resistance: – 30° C to +100° C                                                          |
| Max. cable load     | max. 55 kg per carrier                                                                                                                                                                                            |
| Depth of cable loop | for curves max. 0,3 x track radius;<br>consider tension relief                                                                                                                                                    |

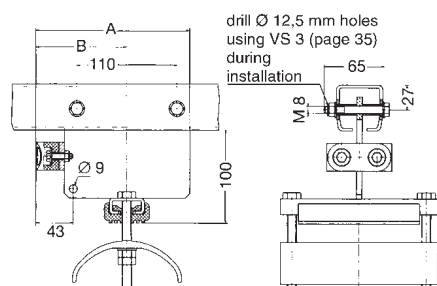
| Type <sup>(1)</sup> | max. thckn. of individual cable mm | max. clamping capacity in mm height x width | A   | B   | C   | D   | Weight kg | Order-No. | Order-No. Polyurethane wheels |
|---------------------|------------------------------------|---------------------------------------------|-----|-----|-----|-----|-----------|-----------|-------------------------------|
|                     |                                    |                                             | mm  |     |     |     |           |           |                               |
| WST 3 F/175-100     | 12                                 | 30 x 135                                    |     | 175 | 110 | 100 | 2,130     | 314 018   | 314 077                       |
| WST 3 F/200-100     | 12                                 | 45 x 135                                    | 200 |     | 110 | 100 | 2,240     | 314 019   | 314 078                       |
| WST 3 F/200-140     | 14                                 | 25 x 135                                    | 200 |     | 110 | 140 | 2,420     | 314 020   | 314 079                       |
| WST 3 F/250-140     | 14                                 | 50 x 135                                    |     | 250 | 185 | 140 | 2,750     | 314 021   | 314 080                       |
| WST 3 F/250-170     | 17                                 | 35 x 135                                    |     | 250 | 185 | 170 | 3,480     | 314 022   | 314 081                       |
| WST 3 F/250-200     | 20                                 | 20 x 135                                    |     | 250 | 185 | 200 | 3,600     | 314 023   | 314 082                       |
| WST 3 F/275-140     | 14                                 | 60 x 135                                    | 275 |     | 185 | 140 | 2,840     | 314 024   | 314 083                       |
| WST 3 F/275-170     | 17                                 | 45 x 135                                    | 275 |     | 185 | 170 | 3,570     | 314 025   | 314 084                       |
| WST 3 F/275-200     | 20                                 | 30 x 135                                    | 275 |     | 185 | 200 | 3,680     | 314 026   | 314 085                       |
| WST 3 F/325-170     | 17                                 | 70 x 135                                    |     | 325 | 260 | 170 | 3,870     | 314 027   | 314 086                       |
| WST 3 F/325-200     | 20                                 | 55 x 135                                    |     | 325 | 260 | 200 | 4,020     | 314 028   | 314 087                       |
| WST 3 F/325-230     | 23                                 | 40 x 135                                    |     | 325 | 260 | 230 | 4,240     | 314 029   | 314 088                       |
| WST 3 F/350-200     | 20                                 | 70 x 135                                    | 350 |     | 260 | 200 | 4,110     | 314 030   | 314 089                       |
| WST 3 F/350-230     | 23                                 | 55 x 135                                    | 350 |     | 260 | 230 | 4,330     | 314 031   | 314 090                       |

### Lead Carriers for flatform cables



| Type <sup>(1)</sup> | for Carrier type                                      | A   | L <sub>M</sub> | C   | Weight kg | Order-No. | Order-No. Polyurethane-Wheels |
|---------------------|-------------------------------------------------------|-----|----------------|-----|-----------|-----------|-------------------------------|
|                     |                                                       | mm  |                |     |           |           |                               |
| MST 3 F/275-100     | WST 3 F/175-100<br>WST 3 F/200-100                    | 244 | 138            | 185 | 2,720     | 314 032   | 314 091                       |
| MST 3 F/275-140     | WST 3 F/200-140<br>WST 3 F/250-140<br>WST 3 F/275-140 | 244 | 138            | 185 | 2,930     | 314 033   | 314 092                       |
| MST 3 F/275-170     | WST 3 F/250-170<br>WST 3 F/275-170                    | 244 | 138            | 185 | 3,660     | 314 034   | 314 093                       |
| MST 3 F/275-200     | WST 3 F/250-200<br>WST 3 F/275-200                    | 244 | 138            | 185 | 3,770     | 314 035   | 314 094                       |
| MST 3 F/325-170     | WST 3 F/325-170                                       | 319 | 175            | 260 | 4,220     | 314 036   | 314 095                       |
| MST 3 F/350-200     | WST 3 F/325-200<br>WST 3 F/350-200                    | 319 | 175            | 260 | 4,360     | 314 037   | 314 096                       |
| MST 3 F/350-230     | WST 3 F/325-230<br>WST 3 F/350-230                    | 319 | 175            | 260 | 4,580     | 314 038   | 314 097                       |

### Track Clamps for flatform cables



| Type            | for Carrier type                   | A   | L <sub>E</sub> | Weight kg | Order-No. |
|-----------------|------------------------------------|-----|----------------|-----------|-----------|
|                 |                                    | mm  |                |           |           |
| EST 3 F/200-100 | WST 3 F/175-100<br>WST 3 F/200-100 | 169 | 100            | 1,800     | 314 039   |
| EST 3 F/200-140 | WST 3 F/200-140                    | 169 | 100            | 1,970     | 314 040   |
| EST 3 F/275-140 | WST 3 F/250-140<br>WST 3 F/275-140 | 244 | 138            | 2,390     | 314 041   |
| EST 3 F/275-170 | WST 3 F/250-170<br>WST 3 F/275-170 | 244 | 138            | 3,120     | 314 042   |
| EST 3 F/275-200 | WST 3 F/250-200<br>WST 3 F/275-200 | 244 | 138            | 3,240     | 314 043   |
| EST 3 F/325-170 | WST 3 F/325-170                    | 319 | 175            | 3,510     | 314 044   |
| EST 3 F/350-200 | WST 3 F/325-200<br>WST 3 F/350-200 | 319 | 175            | 3,660     | 314 045   |
| EST 3 F/350-230 | WST 3 F/325-230<br>WST 3 F/350-230 | 319 | 175            | 3,880     | 314 046   |

<sup>(1)</sup> Use suffix-V for Polyurethane wheels; e.g. WST 3 F/175-100-V for Order-No. 314 077.



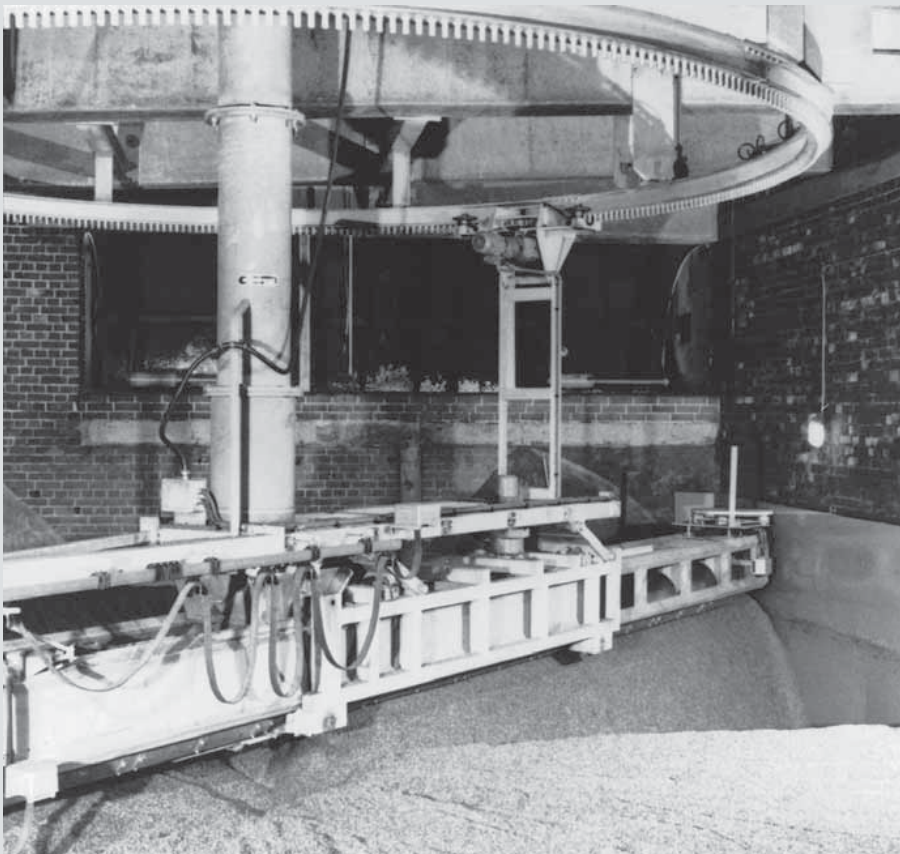
## K 1 TRACK

**acid  
proof**

**Stain-  
less**

Extremely corrosive atmospheres (e. g. acid baths, galvanizing plants, sewage treatment plants, chemical plants etc.) require suitable materials.

The K1 track system, designed specifically for such applications, meets these special requirements.



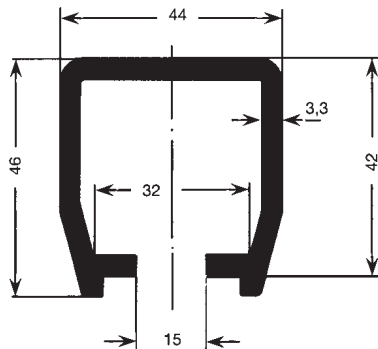
K 1 system in a malt factory



# K 1 TRACK AND ACCESSORIES

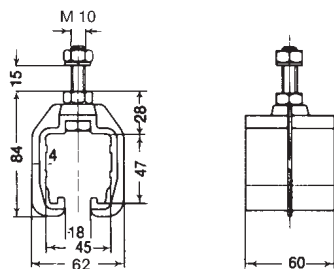
acid  
proof

Stain-  
less



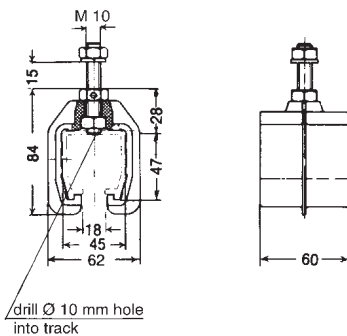
## Tracks

|                                 |                            |
|---------------------------------|----------------------------|
| Type                            | K1                         |
| Order-No. in 4 m sections       | 311 324                    |
| for Carriers type               | <b>SK 1 and WK 1</b>       |
| Material                        | Strong-PVC                 |
| Temperature resistance          | - 30° C to + 55° C         |
| Min. bending radius             | 1,5 m                      |
| Supply length                   | 4 m                        |
| <b>Standard support spacing</b> | 1 m, 0,5 m max. in curves  |
| max. load                       | 25 kg Support distance 1 m |
| Moment of inertia Jx            | 13,18 cm <sup>4</sup>      |
| Sections modulus Wx             | 5,18 cm <sup>3</sup>       |
| Weight                          | 0,740 kg/m                 |



## Sliding Hanger

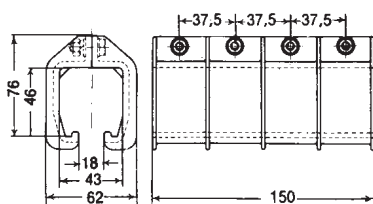
|           |                                           |
|-----------|-------------------------------------------|
| Type      | GK 1                                      |
| Order-No. | 311 020                                   |
| Material  | Polyethylene<br>Hardware: stainless steel |
| max. load | 25 kg                                     |
| Weight    | 0,110 kg                                  |



## Fixpoint Hanger

|           |                                           |
|-----------|-------------------------------------------|
| Typ3      | FK 1                                      |
| Order-No. | 311 030                                   |
| Material  | Polyethylene<br>Hardware: stainless steel |
| max. load | 25 kg                                     |
| Weight    | 0,110 kg                                  |

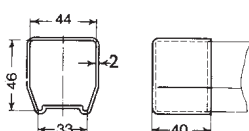
Every installation requires one fixpoint hanger only in the center of the run. With control carriers use one additional each end.



## Joint Clamp

|           |                                           |
|-----------|-------------------------------------------|
| Type      | VK 1                                      |
| Order-No. | 311 040                                   |
| Material  | Polyethylene<br>Hardware: stainless steel |
| Weight    | 0,160 kg                                  |

## End Cap



|           |              |
|-----------|--------------|
| Type      | K 1 E        |
| Order-No. | 312 170      |
| Material  | Polyethylene |
| Weight    | 0,010 kg     |



# K 1 CABLE CARRIERS AND LEAD CARRIERS

acid  
proof

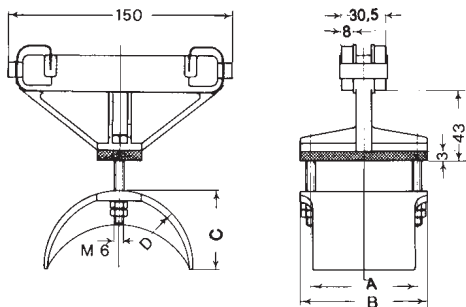
Stain-  
less

## Cable carrier – glider type -



## Engineering Data – glider type

|                    |                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Type               | SK 1 F                                                                                                                                      |
| Max. system length | up to approx. 30 m track length                                                                                                             |
| Material           | Carrier body: HP-Polyethylene<br>Support saddle: HP-Polyethylene<br>Hardware: stainless steel<br>Temperature resistance: - 30° C to + 80° C |
| Travelling speed   | max. 50 m/min.                                                                                                                              |
| Max. load          | max. 5 kg per glider                                                                                                                        |

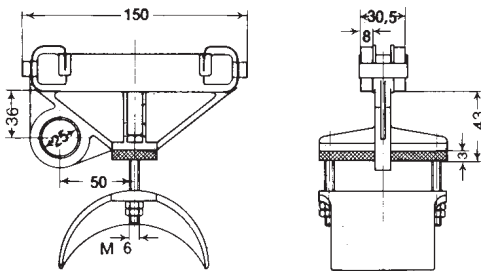


## Cable Carrier – glider type – for flatform cable

| Type       | max.<br>thickn. of<br>individual<br>cable mm | max. clamping<br>capacity<br>mm<br>height x width | A  | B  | C  | D   | Weight<br>kg | Order-<br>No. |
|------------|----------------------------------------------|---------------------------------------------------|----|----|----|-----|--------------|---------------|
| SK 1 F/150 | 12                                           | 25 x 65                                           | 71 | 85 | 52 | 100 | 0,210        | 311 050       |

## Lead Carrier – glider type – for flatform cable

| Type        | for<br>Glider type | Weight<br>kg | Order-<br>No. |
|-------------|--------------------|--------------|---------------|
| MSK 1 F/150 | SK 1 F/150         | 0,220        | 311 060       |



## Cable Carrier – roller type –

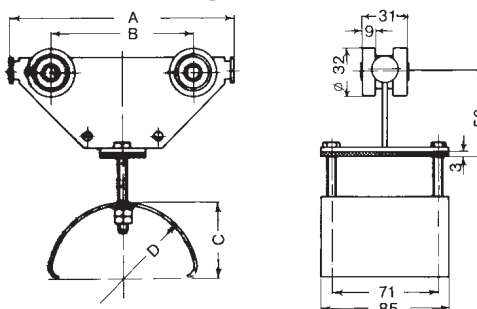


## Engineering Data – roller type

|                  |                                                                                                                                                                     |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type             | WK 1 F                                                                                                                                                              |
| Wheels           | Polyethylene rollers on bushed bearings                                                                                                                             |
| Travelling Speed | max. 60 m/min.                                                                                                                                                      |
| Material         | Carrier body: stainless steel<br>Wheels: Polyethylene<br>Support saddle: stainless steel<br>Hardware: stainless steel<br>Temperature resistance: - 30° C to + 80° C |
| Max. load        | max. 10 kg per carrier                                                                                                                                              |
| Loop depth       | for curves max. 0,3 x track radius,<br>consider tension relief                                                                                                      |

## Cable Carrier – roller type – for flatform cable

| Type         | max.<br>thickn. of<br>individual<br>cable mm | max. clamping<br>capacity<br>mm<br>height x width | A   | B  | C  | D   | Weight<br>kg | Order-<br>No. |
|--------------|----------------------------------------------|---------------------------------------------------|-----|----|----|-----|--------------|---------------|
| WK 1 F/100 n | 8                                            | 25 x 65                                           | 100 | 55 | 25 | 50  | 0,420        | 311 210       |
| WK 1 F/150 n | 12                                           | 25 x 65                                           | 150 | 95 | 50 | 100 | 0,510        | 311 180       |

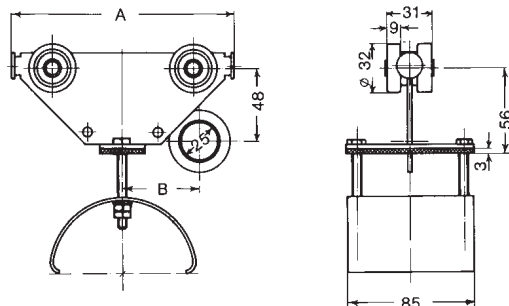




# K 1 LEAD CARRIERS AND ACCESSORIES

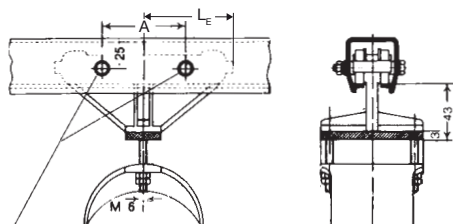
acid  
proof

Stain-  
less



## Lead Carriers – roller type – for flatform cables

| Type                | for<br>Carrier type | A   | B  | Weight<br>kg | Order-<br>No. |
|---------------------|---------------------|-----|----|--------------|---------------|
|                     |                     | mm  |    |              |               |
| <b>MK 1 F/100 n</b> | <b>WK 1 F/100 n</b> | 100 | 45 | 0,450        | 311 220       |
| <b>MK 1 F/150 n</b> | <b>WK 1 F/150 n</b> | 150 | 55 | 0,540        | 311 190       |



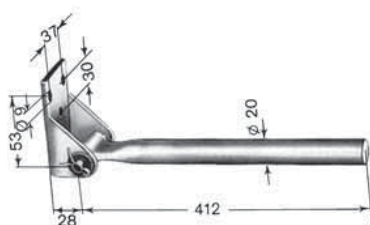
Drill Ø 10 mm during installation into the rail track !

## Track Clamps for flatform cables

LE = 125 mm with strain relief and stop

LE = 75 mm without strain relief

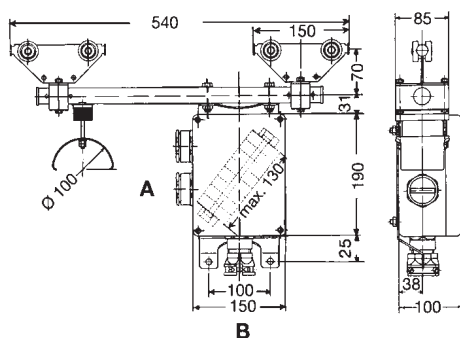
| Type                | for Glider and Carrier type | A mm | Weight kg | Order-No. |
|---------------------|-----------------------------|------|-----------|-----------|
| <b>ESK 1 F/150</b>  | <b>SK 1 F/150</b>           | 70   | 0,220     | 311 070   |
| <b>EK 1 F/100 n</b> | <b>WK 1 F/100 n</b>         | 55   | 0,370     | 311 230   |
| <b>EK 1 F/150 n</b> | <b>WK 1 F/150 n</b>         | 95   | 0,500     | 311 200   |



## Tow arm

| Type      | GKM               | GKM/K           |
|-----------|-------------------|-----------------|
| Material  | steel, galvanized | stainless steel |
| Weight    | 0,620 kg          | 0,620 kg        |
| Order-No. | 260 350           | 261 560         |

## Control Carrier

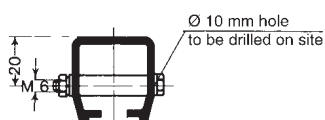


| Type <sup>(1)</sup> | max. thickn. of individual cable mm | max. clamping capacity mm height x width | max. carrying capacity kg | Weight kg | Order-No. |
|---------------------|-------------------------------------|------------------------------------------|---------------------------|-----------|-----------|
| <b>ST-K 1</b>       | 12                                  | 25 x 65                                  | 20                        | 2,800     | 311 110   |

Cable glands and terminal clamps to be ordered separately (see cat. 8L).

| Cable glands      | max. number A-Side | max. number B-Side | Cable glands      | max. number A-Side | max. number B-Side |
|-------------------|--------------------|--------------------|-------------------|--------------------|--------------------|
| <b>M 20 x 1,5</b> | 6                  | 2                  | <b>M 40 x 1,5</b> | 2                  | 1                  |
| <b>M 25 x 1,5</b> | 5                  | 2                  | <b>M 50 x 1,5</b> | 2                  | 1                  |
| <b>M 32 x 1,5</b> | 3                  | 1                  | <b>M 63 x 1,5</b> | -                  | -                  |

## Bumper stop



| Type      | PK 1            |
|-----------|-----------------|
| Material  | PVC             |
| Hardware  | stainless steel |
| Weight    | 0,020 kg        |
| Order-No. | 311 170         |

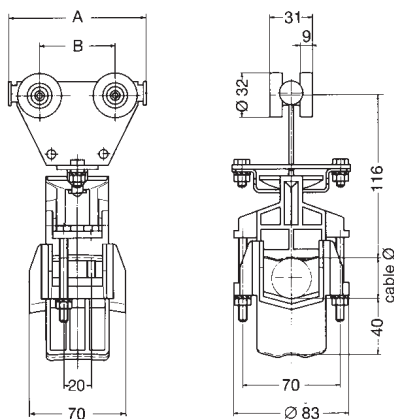
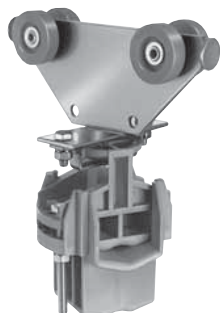
<sup>(1)</sup> Control Carrier tracks use one fixpoint hanger each in the center and at both ends of the run. The rest in sliding hangers.



# K 1 CABLE CARRIERS AND ACCESSORIES – Steel swivel type –

acid  
proof

Stain-  
less

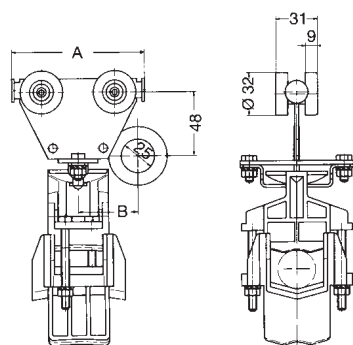


## Engineering Data

|                     |                                                                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                | <b>WK 1 R</b>                                                                                                                                                     |
| Wheels              | Polyethylene rollers on bushed bearings                                                                                                                           |
| Travelling speed    | 60 m/min.                                                                                                                                                         |
| Material            | Carrier body: stainless steel<br>Wheels: Polyethylene<br>Support saddle: Polypropylene<br>Hardware: stainless steel<br>Temperature resistance: – 10° C to + 80° C |
| max. cable load     | max. 10 kg per carrier                                                                                                                                            |
| Depth of cable loop | for curves max. 0,3 x track radius,<br>consider tension relief                                                                                                    |

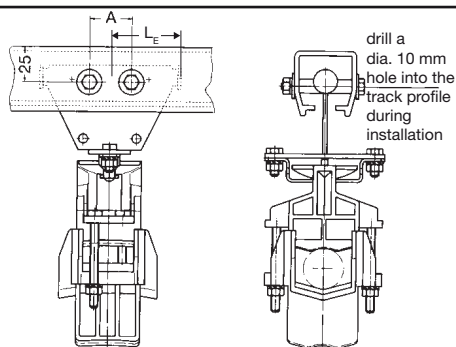
## Cable Carriers for round cables and hoses

| Type              | Cable<br>Ø    | A<br>mm | B<br>mm | Weight<br>kg | Order-<br>No. |
|-------------------|---------------|---------|---------|--------------|---------------|
| <b>WK 1 R/100</b> | 5 mm to 38 mm | 100     | 55      | 0,420        | 311 308       |
| <b>WK 1 R/150</b> |               | 150     | 95      | 0,470        | 311 309       |



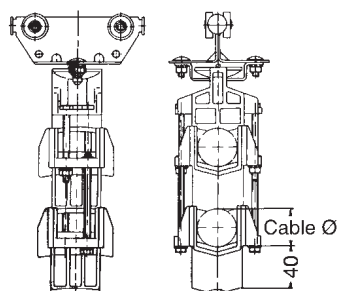
## Lead Carriers for round cables and hoses

| Type              | for<br>Carrier type | A<br>mm | B<br>mm | Weight<br>kg | Order-<br>No. |
|-------------------|---------------------|---------|---------|--------------|---------------|
| <b>MK 1 R/100</b> | <b>WK 1 R/100</b>   | 100     | 45      | 0,450        | 311 310       |
| <b>MK 1 R/150</b> | <b>WK 1 R/150</b>   | 150     | 55      | 0,500        | 311 311       |



## Track Clamps for round cables and hoses

| Type              | for<br>Carrier type | LE | A<br>mm | Weight<br>kg | Order-<br>No. |
|-------------------|---------------------|----|---------|--------------|---------------|
| <b>EK 1 R/100</b> | <b>WK 1 R/100</b>   | 50 | 55      | 0,370        | 311 312       |
| <b>EK 1 R/150</b> | <b>WK 1 R/150</b>   | 75 | 95      | 0,420        | 311 313       |



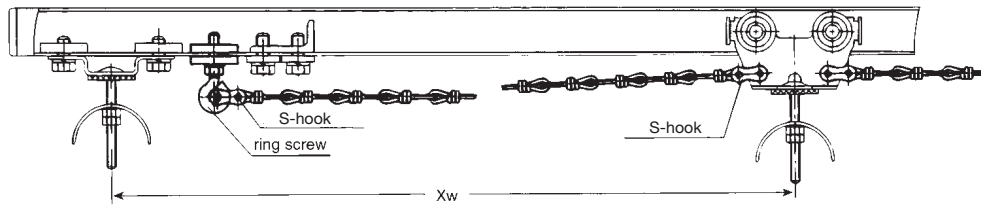
## Support saddle for round cables and hoses for additional tiers

| Type         | for<br>Carrier type       | Weight<br>kg | Order-<br>No. |
|--------------|---------------------------|--------------|---------------|
| <b>LAR-E</b> | <b>WK 1 R (all types)</b> | 0,110        | 312 532       |



# TENSION RELIEF

## Chains for WST 1 and WST 2 carriers



### How to determine length of chain

| Type         | ZEK-K 20   | ZEK-K 20 E |
|--------------|------------|------------|
| Order-No.    | 360 027    | 350 349    |
| Material     | steel      | V4A        |
| Wire-Ø mm    | 1,80       | 1,80       |
| Link size mm | 25         | 25         |
| Protection   | galvanized | -          |
| Weight kg/m  | 0,007      | 0,007      |

$$X_w = \frac{S + SP}{n} \times 1,05$$

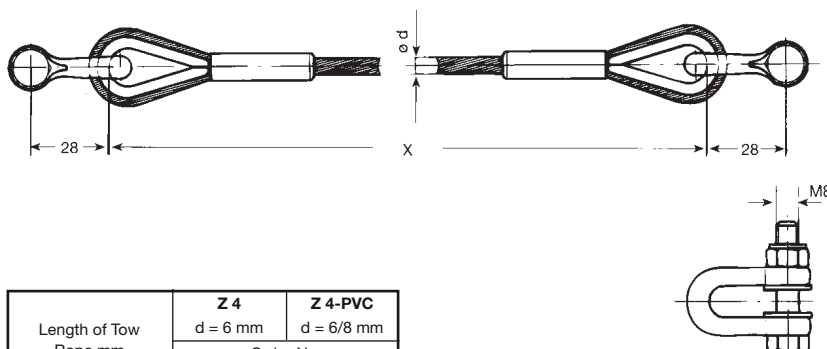
$X_w$  = Distance c/c carriers with chain stretched mm  
 $S$  = Fahrweg in mm  
 $SP$  = Travel distance mm  
 $n$  = Number of loops

### Accessories:

Each piece of chain requires: 2 S-hooks<sup>(1)</sup>, Order-No. 360 390, stainless steel 360 391  
 Each track clamp requires: 1 ring screw type RS 1-2, Order-No. 312 827, stainless steel 313 022

## Steel Tow Ropes for WST 3 Carriers

Standard steel rope with fibreglass reinforcing  
 Type Z 4 galvanized; Type Z 4 - PVC additionally PVC shrouded complete, cut to suit the application, incl. rope clamps, thimbles and shackles.



### How to determine length of rope

| Length of Tow Rope mm | Z 4<br>d = 6 mm | Z 4-PVC<br>d = 6/8 mm |
|-----------------------|-----------------|-----------------------|
|                       | Order-No.       |                       |
| up to 2000            | 346 372         | 346 383               |
| 2001- 3000            | 346 373         | 346 384               |
| 3001- 4000            | 346 374         | 346 385               |
| 4001- 5000            | 346 375         | 346 386               |
| 5001- 6000            | 346 376         | 346 387               |
| 6001- 7000            | 346 377         | 346 388               |
| 7001- 8000            | 346 378         | 346 389               |
| 8001- 9000            | 346 379         | 346 390               |
| 9001-10000            | 346 380         | 346 391               |
| 10001-11000           | 346 381         | 346 392               |
| 11001-12000           | 346 382         | 346 393               |

Please specify with your order:  
 Tow Rope: Type  
 Length of tow rope X: mm  
 Order-No.:

$$X = \frac{S \cdot (f - 0,1) + Z}{n} + 2 Y$$

$X$  = Length of tow rope mm  
 $S$  = Travel distance mm  
 $f$  = Cable safety factor (e.g.  $\geq 1,15$ )  
 $Z$  = Open space (min. 1 carrier) mm  
 $n$  = Number of loops  
 $Y$  = Projecting bumper mm (see table)

| Bumper projection: |         |
|--------------------|---------|
| Carrier Type       | Y in mm |
| WST 3 (1 bumper)   | 3       |
| WST 3 (2 bumper)   | 15      |

<sup>(1)</sup> not suited for WST 2 F/85, WST 2 F/125, WST 2 F/150, WST 2 F/200-100, WST 2 R/85, WST 2 R/125.



# TYPICAL APPLICATIONS AND HOW TO ORDER

– cables & fittings see cat. 8 L –

## S 1 Track System (flat cable)

Application: Electric hoist, outdoors with separate supply system for pendant control

|                         |                         |
|-------------------------|-------------------------|
| Current load:           | 11 kW                   |
| Voltage:                | 380 V, 50 Hz            |
| Required control cable: | 7 x 1,5 mm <sup>2</sup> |
| Travel distance:        | 28 m                    |
| Perm. depth of loops:   | 1 m                     |
| Travel speed:           | 35 m/min                |

### How to select the correct cable festoon system:

|                                                                                                            |                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Take ampere load from cat. 8 L                                                                          | 22,5 A                                                                                                                                                                                              |
| 2. Select suitable cables (cat. 8 L)                                                                       | For main current: Neoprene flatform cable<br>4 x 2,5 mm <sup>2</sup> , dimensions: 8,2 x 24 mm<br>For control current: Neoprene flatform cable<br>8 x 1,5 mm <sup>2</sup> , dimensions: 6,4 x 32 mm |
| 3. Select cable carrier, see page 10                                                                       | WS 1 F/85-PM                                                                                                                                                                                        |
| 4. Cable safety length, see page 49                                                                        | f = 1,1                                                                                                                                                                                             |
| 5. Determine number of cable loops, diagram page 50                                                        | 17                                                                                                                                                                                                  |
| 6. Determine storage distance, formula page 49<br>SP = 17 x 85 mm + 85 mm                                  | = min. 1530 mm                                                                                                                                                                                      |
| 7. Determine length of cable, formula page 49<br>L = (28 m + 1,53 m) x 1,1 = 32,48 m + 2 x 1 m hookup ends | = 35 m                                                                                                                                                                                              |
| 8. Control carrier, see page 18                                                                            | ST-ST 1/A1                                                                                                                                                                                          |

| Material to order:                                       | Typ          | Order-No. |
|----------------------------------------------------------|--------------|-----------|
| 2 x 30 m Track (10 lengths of 6 m)                       | S1           | 312 946   |
| 2 x 17 Fixpoint hangers <sup>(1)</sup>                   | FAS 1        | 310 500   |
| 2 x 17 Pair of Bolts                                     | M 8 x 25     | 310 510   |
| 2 x 4 Joint clamps                                       | VS 1         | 310 050   |
| 2 x 2 End caps                                           | K 30         | 360 023   |
| 2 x 16 Cable carriers                                    | WS 1 F/85-PM | 312 689   |
| 1 Lead carrier                                           | MS 1 F/85-PM | 312 692   |
| 2 x 1 Track clamp                                        | ES 1 F/85-PM | 312 693   |
| 3 Bumper stops                                           | PS 1-1       | 312 605   |
| 1 Control carrier                                        | ST-ST 1/A1   | 312 695   |
| c/w:                                                     |              |           |
| 7 Terminal clamps                                        | SAK 2,5      | 330 800   |
| 1 Terminal clamp for ground                              | EK 2,5 NPA   | 331 283   |
| 1 End plate                                              | APPA 2,5     | 331 278   |
| 2 End angles                                             | EWK 1        | 331 288   |
| A-Seite: 1 flat cable gland for 8 x 1,5 mm <sup>2</sup>  | M 50 x 1,5-1 | 332 552   |
| 1 counter nut                                            | M 50 x 1,5   | 332 535   |
| B-Seite: 1 round cable gland for 8 x 1,5 mm <sup>2</sup> | M 25 x 1,5   | 332 539   |
| 1 counter nut                                            | M 25 x 1,5   | 332 533   |
| 1 Brake spring                                           | BF 1         | 310 860   |
| 2 flat cable glands for 4 x 2,5 mm <sup>2</sup>          | M 32 x 1,5-1 | 332 550   |
| 2 counter nut                                            | M 32 x 1,5   | 332 534   |
| 1 flat cable gland for 8 x 1,5 mm <sup>2</sup>           | M 50 x 1,5-1 | 332 552   |
| 1 counter nut                                            | M 50 x 1,5   | 332 535   |



# TYPICAL APPLICATIONS AND HOW TO ORDER

– cables & fittings see cat. 8 L –

## S 1 Track System (spiral looped round cable)

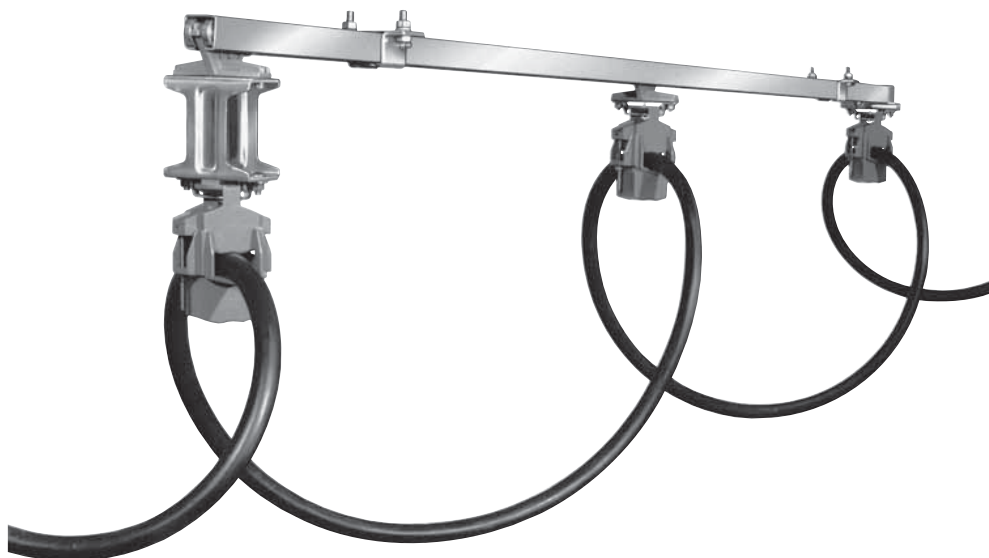
Application: Power supply to welding machine

|                        |                                          |
|------------------------|------------------------------------------|
| Cable:                 | 2 round cables Ø 25 mm<br>1 hose Ø 22 mm |
| Travel distance::      | 42 m                                     |
| Perm. depth of loops:: | 1,7 m                                    |
| Travel speed:          | max. 30 m/min                            |

How to select the correct cable festoon system:

|                                                                                                             |                |
|-------------------------------------------------------------------------------------------------------------|----------------|
| 1. Selection of carriers, see page 15                                                                       | WST 1 R/125    |
| 2. Additional support saddles, see page 15                                                                  | LAR            |
| 3. Cable safety length, see page 49                                                                         | f = 1,2        |
| 4. Determine number of cable loops, diagram page 52                                                         | 15             |
| 5. Determine storage distance, formula page 49<br>SP = 15 x 125 mm + 125 mm                                 | = min. 2000 mm |
| 6. Determine length of cable/hose, formula page 49<br>L = (42 m + 2 m) x 1,2 = 52,8 m + 2 x 3 m hookup ends | = 59 m         |

| Material to order:                             | Type        | Order-No. |
|------------------------------------------------|-------------|-----------|
| 45 m Track (7 lengths of 6 m, 1 length of 3 m) | S 1, 6 m    | 312 956   |
|                                                | S 1, 3 m    | 312 953   |
| 2 Fixpoint hangers <sup>(1)</sup>              | FDS 1       | 310 430   |
| 22 Sliding hangers <sup>(1)</sup>              | ADS 1       | 310 370   |
| 7 Joint clamps                                 | VS 1        | 310 050   |
| 2 End caps                                     | K 30        | 360 023   |
| 14 Cable carriers                              | WST 1 R/125 | 312 493   |
| 1 Lead carrier                                 | MST 1 R/125 | 312 497   |
| 1 Track clamp                                  | EST 1 R     | 312 498   |
| 32 Support saddles                             | LAR         | 312 500   |
| 1 Bumper stop                                  | PS 1        | 310 300   |



<sup>(1)</sup> Consider permissible track area load (see diagram page 48).



# TYPICAL APPLICATIONS AND HOW TO ORDER

– cables & fittings see cat. 8 L –

## S 2 Track System (flat cables)

Application: Current supply system for crane trolley indoors

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Cables:               | 2 flatform 4 x 16 mm <sup>2</sup><br>4 flatform 12 x 2,5 mm <sup>2</sup> |
| Travel distance:      | 35 m                                                                     |
| Perm. depth of loops: | 1,8 m                                                                    |
| Travel speed          | 80 m/min                                                                 |

How to select the correct cable festoon system:

|                                                                                                            |                               |
|------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. Select cable carrier, see page 27                                                                       | WST 2 FR/200-140 B175P        |
| 2. Cable safety length, see page 49                                                                        | f = 1,15                      |
| 3. Determine number of cable loops, diagram page 51                                                        | 12                            |
| 4. Determine storage distance, formula page 49<br>SP = 12 x 200 mm + 200 mm                                | = min. 2600 mm <sup>(3)</sup> |
| 5. Determine length of cable, formula page 49<br>L = (35 m + 2,6 m) x 1,15 = 43,24 m + 2 x 4 m hookup ends | = 52 m                        |

| Material to order:                                            | Typ                    | Order-No. |
|---------------------------------------------------------------|------------------------|-----------|
| 38 m Track (6 x 6 m, 1 x 2 m) (incl. 2 x 200 m track reserve) | S 2, 6 m               | 312 636   |
|                                                               | S 2, 2 m               | 312 632   |
| 2 Fixpoint hangers <sup>(1)</sup>                             | FDS 2                  | 315 210   |
| 24 Sliding hangers <sup>(1)</sup>                             | ADS 2                  | 315 200   |
| 6 Joint clamps                                                | VS 2                   | 315 050   |
| 2 End caps                                                    | K 40                   | 316 449   |
| 11 Cable carriers                                             | WST 2 FR/200-140 B175P | 316 911   |
| 1 Lead carrier                                                | MST 2 FR/200-140 B175P | 316 960   |
| 1 Track clamp                                                 | EST 2 FR/140 B175      | 316 990   |
| 1 Bumper stop                                                 | PS 2-1 G               | 317 001   |
| 2 x 52 m PVC-flatform cable (N)                               | H07 VV H6-F 4 G 16     | 331 362   |
| 4 x 52 m PVC-flatform cable (N)                               | H07 VV H6-F 12 G 2,5   | 331 358   |
| 4 Flat cable glands for 4 x 16 mm <sup>2</sup>                | M 50 x 1,5-2           | 332 553   |
| 4 Counter nuts                                                | M 50 x 1,5             | 332 535   |
| 8 Flat cable glands for 12 x 2,5 mm <sup>2</sup>              | M 63 x 1,5-1           | 332 554   |
| 8 Counter nuts                                                | M 63 x 1,5             | 332 542   |

## K1 Track System (flat cables)

Application: Current supply system for a malt factory (high humidity)

|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Cables:               | 1 flatform 4 x 10 mm <sup>2</sup><br>3 flatform 8 x 1,5 mm <sup>2</sup> |
| Travel distance:      | 50 m                                                                    |
| Perm. depth of loops: | 1 m                                                                     |
| Travel speed:         | 20 m/min                                                                |

How to select the correct cable festoon system:

|                                                                                                               |              |
|---------------------------------------------------------------------------------------------------------------|--------------|
| 1. Select cable carrier, see page 40                                                                          | WK 1 F/150 n |
| 2. Cable safety length, see page 49                                                                           | f = 1,1      |
| 3. Determine number of cable loops, diagram page 50                                                           | 29           |
| 4. Determine storage distance, formula page 49<br>SP = 29 x 150 mm + 150 mm                                   | = min. 4,5 m |
| 5. Determine length of cable, formula page 49<br>L = (50 m + 4,5 m) x 1,1 = 59,95 m + 2 x 2 m connection ends | = 64 m       |

| Material to order:                                             | Typ                 | Order-No. |
|----------------------------------------------------------------|---------------------|-----------|
| 55 m Track (13 x 4 m, 1 x 3 m) (incl. 2 x 200 m track reserve) | K 1, 4 m            | 311 324   |
|                                                                | K 1, 3 m            | 311 323   |
| 13 Joint clamps                                                | VK 1                | 311 040   |
| 59 Sliding hangers <sup>(2)</sup>                              | GK 1                | 311 020   |
| 1 Fixpoint hanger <sup>(2)</sup>                               | FK 1                | 311 030   |
| 2 End caps                                                     | K 1 E               | 312 170   |
| 28 Cable carriers                                              | WK 1 F/150 n        | 311 180   |
| 1 Lead carrier                                                 | MK 1 F/150 n        | 311 190   |
| 1 Tow arm                                                      | GKM/K               | 311 301   |
| 1 Track clamp                                                  | EK 1 F/150 n        | 311 200   |
| 64 m PVC-flatform cable (N)                                    | H07 VV H2-F 4 G 10  | 331 361   |
| 3 x 64 m PVC-flatform cable (N)                                | H07 VV H2-F 8 G 1,5 | 331 354   |

<sup>(1)</sup> Consider permissible track area load (see diagram page 47).

<sup>(2)</sup> Permissible load (25 kg) of hangers to be considered.

<sup>(3)</sup> Track reserve 2 x 200 mm



# SYSTEM LAYOUT

## Engineering Data

## Cable Specification

|                            |      |                  |                                           |            |              |             |                   |
|----------------------------|------|------------------|-------------------------------------------|------------|--------------|-------------|-------------------|
| Travel distance            | S =  | m                | Number of cables                          | Cable type | Dimension mm | Weight kg/m | Total weight kg/m |
| Travel speed               | V =  | m/min            |                                           |            |              |             |                   |
| Acceleration               | a =  | m/s <sup>2</sup> |                                           |            |              |             |                   |
| Loop depth                 | h =  | m                |                                           |            |              |             |                   |
|                            |      |                  |                                           |            |              |             |                   |
| Storage distance           | SP = | m                |                                           |            |              |             |                   |
| Open space                 | Z =  | m                |                                           |            |              |             |                   |
| Cable safety factor        | f =  |                  |                                           |            |              |             |                   |
| Number of loops            | n =  |                  |                                           |            |              |             |                   |
| Cable carrier              | Typ  |                  |                                           |            |              |             |                   |
| Length of carrier          | l =  | m                |                                           |            |              |             |                   |
| Diameter of support saddle | D =  | m                |                                           |            |              |             |                   |
| Weight of carrier          | Gw = | kg               |                                           |            |              |             |                   |
| Track                      | Typ  |                  |                                           |            |              |             |                   |
| Weight of track            | Gs = | kg/m             | Total Weight of all cables per meter GL = |            |              |             |                   |

## Layout of the system

### 1. Number of loops (see diagram or formula) (At Z = 0)

|                                                     |                                 |   |  |            |
|-----------------------------------------------------|---------------------------------|---|--|------------|
| $n = \frac{f \times S}{2 h - f \times l + 1,254 D}$ | $= \frac{x}{2 x - x + 1,254 x}$ | = |  | determined |
|-----------------------------------------------------|---------------------------------|---|--|------------|

### 2. Loop depth (see diagram or formula)

|                                                                   |                                                                 |   |  |   |
|-------------------------------------------------------------------|-----------------------------------------------------------------|---|--|---|
| $h = \frac{f}{2} \left( \frac{S}{n} + l \right) - 0,627 \times D$ | $= \frac{2}{2} \left( \frac{S}{n} + l \right) - 0,627 \times D$ | = |  | m |
|-------------------------------------------------------------------|-----------------------------------------------------------------|---|--|---|

### 3. Storage distance (center track clamp to center lead carrier)

|                       |   |   |   |  |   |  |   |
|-----------------------|---|---|---|--|---|--|---|
| $SP = n \times l + Z$ | = | x | + |  | = |  | m |
|-----------------------|---|---|---|--|---|--|---|

### 4. Cable length

|                                                           |        |   |   |     |   |  |   |
|-----------------------------------------------------------|--------|---|---|-----|---|--|---|
| Cable length w/o hookup endsen<br>$L = (S + SP) \times f$ | =      | ( | + | ) x | = |  | m |
| Hookup length – track clamp side                          | LE     | = |   |     |   |  | m |
| Hookup length – lead carrier side                         | LM     | = |   |     |   |  | m |
| Total cable length                                        | L ges. | = |   |     |   |  | m |

### 5. Cable weight per carrier

|                               |   |  |   |  |   |  |    |
|-------------------------------|---|--|---|--|---|--|----|
| $GLW = \frac{L}{n} \times GL$ | = |  | x |  | = |  | kg |
|-------------------------------|---|--|---|--|---|--|----|

### 6. Load on track per meter

|                                |   |  |   |  |   |  |      |
|--------------------------------|---|--|---|--|---|--|------|
| $GM = \frac{GLW + Gw}{l} + Gs$ | = |  | + |  | = |  | kg/m |
|--------------------------------|---|--|---|--|---|--|------|

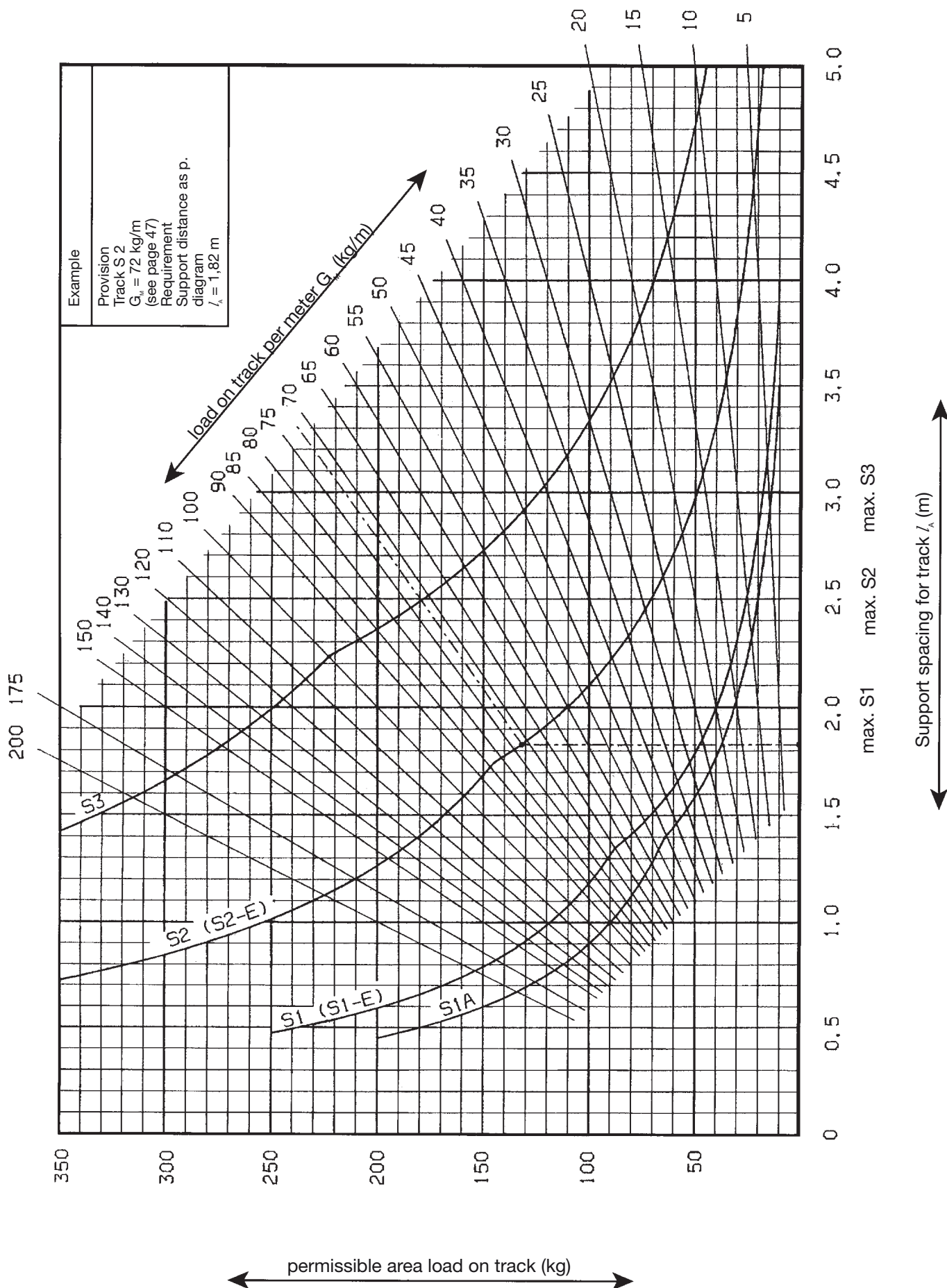
### 7. Support spacing for track

|                     |                     |   |  |   |
|---------------------|---------------------|---|--|---|
| see diagram page 48 | Support spacing / A | = |  | m |
|---------------------|---------------------|---|--|---|



# SUPPORT SPACING FOR BOX TRACKS

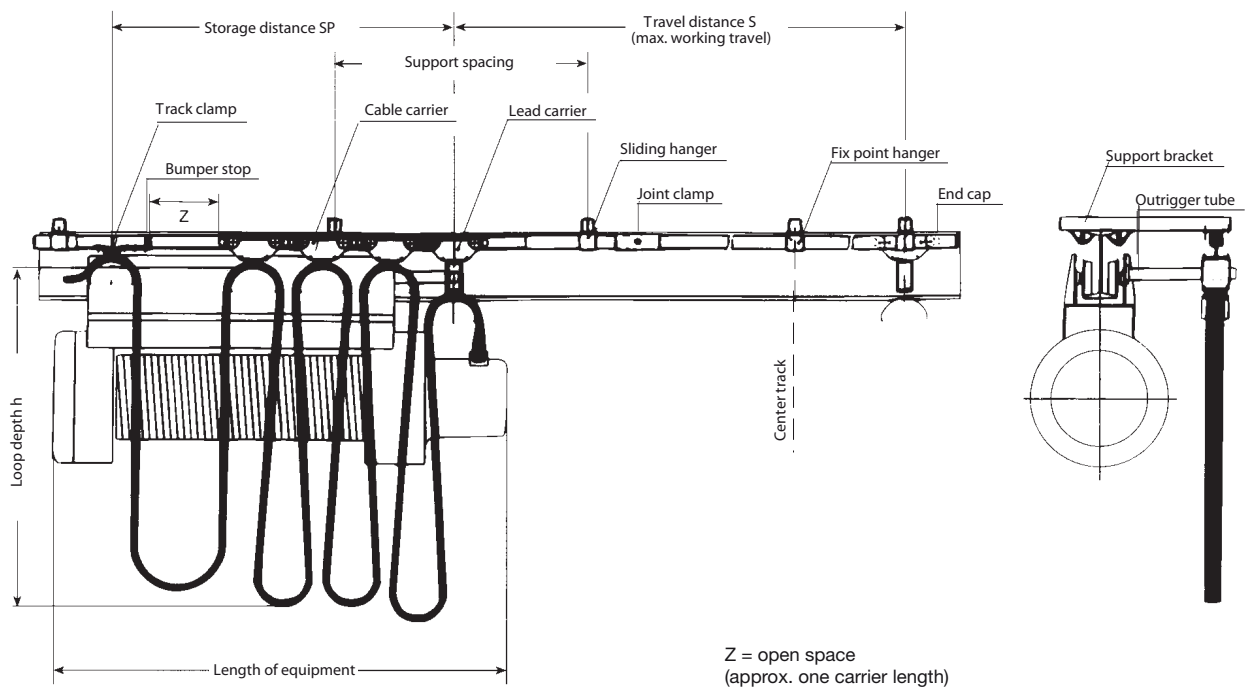
## S 1 A – S 1 – S 1 E – S 2 – S 2 E – S 3





# HOW TO DETERMINE

## Number and Depth of Loops, Storage Distance, Cable Length, Number of Carriers



### Cable Safety Length Directions

| Travel Speed                  | cable loop depth | safety factor |
|-------------------------------|------------------|---------------|
| up to 35 m/min                | more than 0,3 m  | f = 1,1       |
| up to 50 m/min                | up to 0,8 m      | f = 1,15      |
| up to 50 m/min                | more than 0,8 m  | f = 1,1       |
| up to 80 m/min                | up to 0,8 m      | f = 1,2       |
| up to 80 m/min                | more than 0,8 m  | f = 1,15      |
| for spiral looped round cable |                  | f = 1,2       |

For higher speed factors please consult factory.

### Number of loops

$$n = \frac{f \times S}{2h - f \times l + 1,254 D}$$

### Cable loop depth

$$h = \frac{f}{2} \left( \frac{S}{n} + l \right) - 0,627 \times D$$

### Storage distance

$$SP = n \times l + Z$$

### Cable length

(c/c track clamp – lead carrier without hookup ends)

$$L = (S + SP) \times f$$

### Number of Carriers

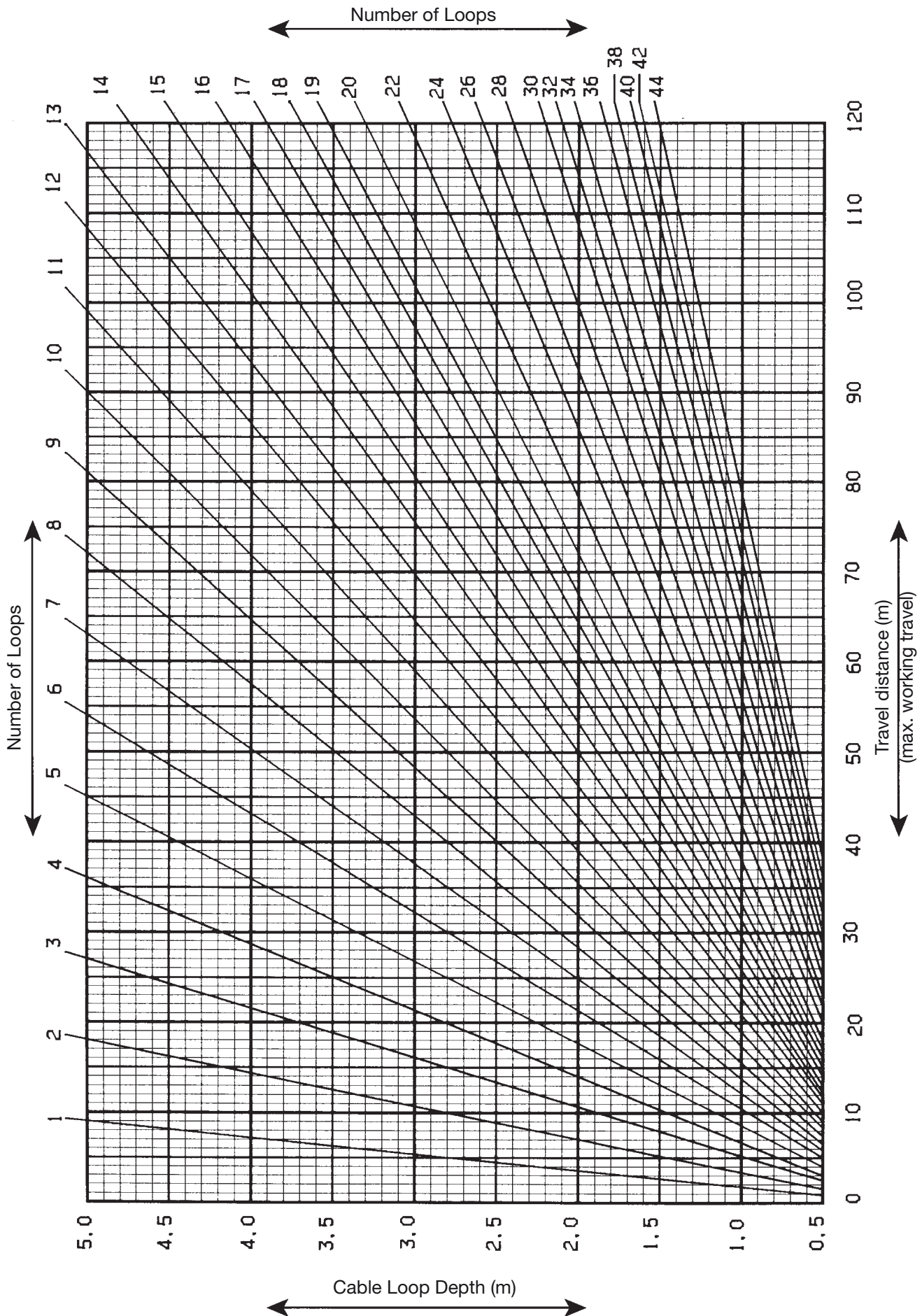
(without lead carrier and track clamp)

$$= n - 1$$

- S = Travel distance (m)
- h = Cable loop depth (m)
- SP = Storage distance (m)
- Z = Open space  
(min. one carrier length)
- n = Number of loops
- l = Length of carrier (m)
- D = Diameter of  
support saddle (m)
- f = Cable length safety factor



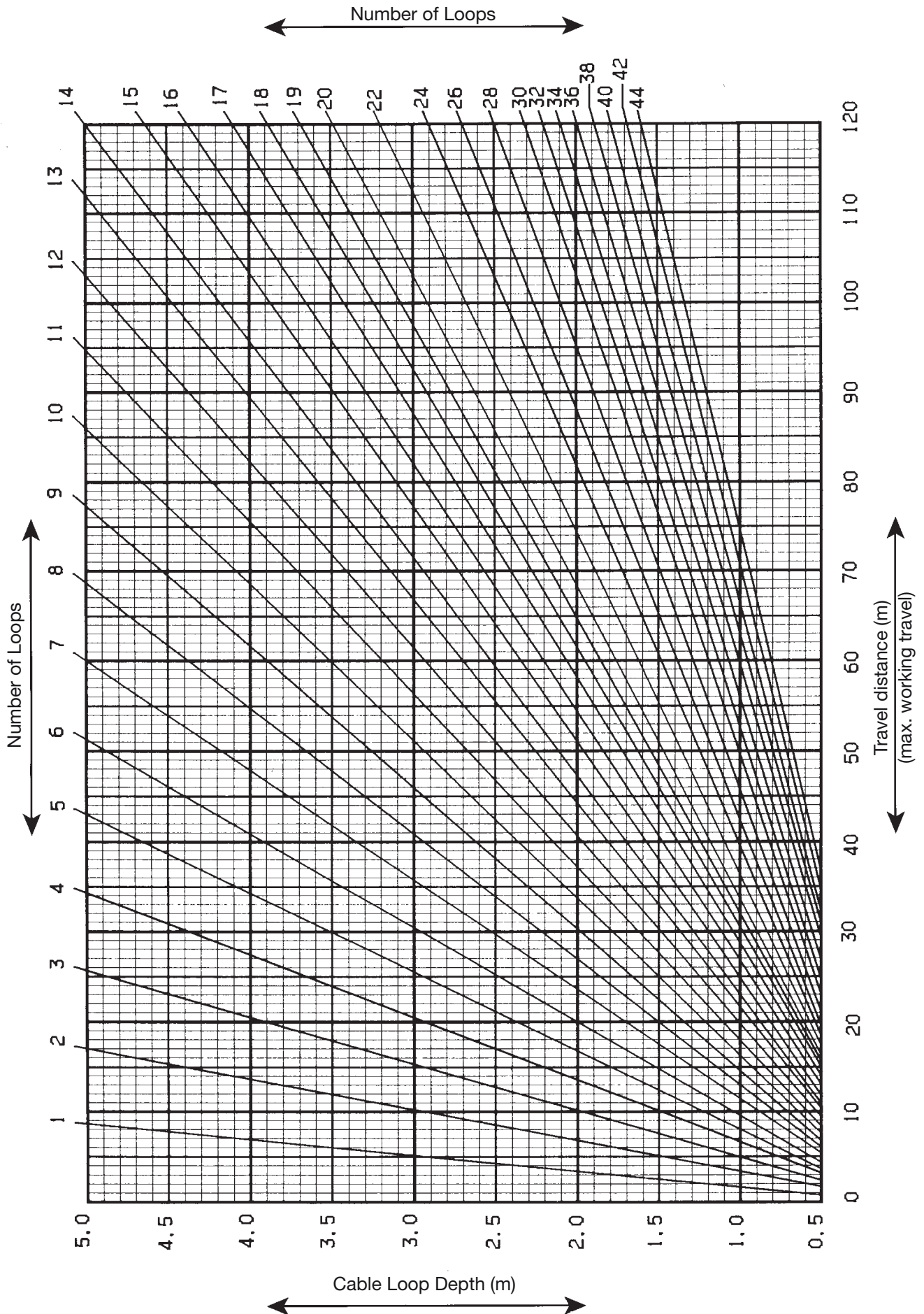
## CABLE LOOPS



The diagram considers a cable length safety factor of  $f = 1.1$



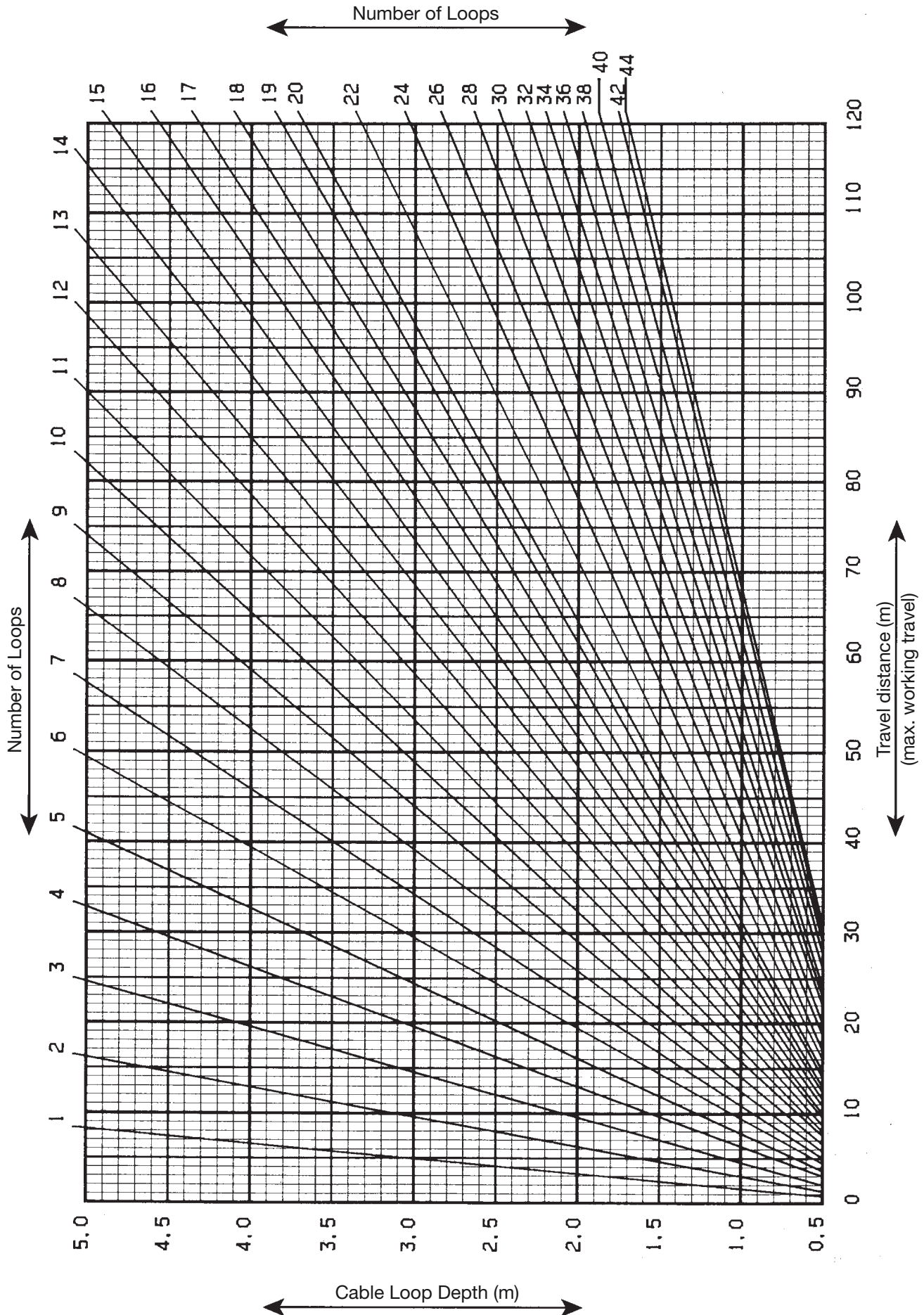
## CABLE LOOPS



The diagram considers a cable length safety factor of  $f = 1.15$



## CABLE LOOPS



The diagram considers a cable length safety factor of  $f = 1.2$



Cable carrier system for a street car wash



Cable carrier system for the cross travel on a outdoor crane



## NOTES

---



## Products and Service

Catalog No.

### 1 Open conductor systems

Open conductor systems 1a

### 2 Insulated conductor systems

U 10 2a

FABA 100 2b

U 15 - U 25 - U 35 2c

U 20 - U 30 - U 40 2d

### 3 Compact conductor systems

VKS 10 3a

VKS - VKL 3b

### 4 Enclosed conductor systems

KBSL - KSL 4a

KBH 4b

MKLD - MKLF - MKLS 4c

LSV - LSVG 4d

### 5 Contactless power system

Contactless power system (CPS®) 5a

### 6 Data transmission

VAHLE Powercom® 6a

Slotted Microwave Guide (SMG) 6b

### 7 Positioning systems

VAHLE APOS® 7a

### 8 Festoon systems and cables

Festoon systems for □- tracks 8a

Festoon systems for flat cables on I- tracks 8b

Festoon systems for round flat cables on I- tracks 8c

Festoon systems for ◇- tracks 8d

Cables 8e

### 9 Reels

Spring operated cable reels 9a

Motor powered cable reels 9b

### 10 Others

Battery charging systems 10a

Heavy enclosed conductor systems 10b

Tender 10c

Contact wire 10d

### Assemblies/Commissioning

### Spare parts/Maintenance service





